



ExaSAN SW16

User Guide

Includes hardware setup information for:

- PCIe 2.0 switch (Model: SW16)
- PCIe 2.0 RAID System (Models: A12S2-PS; B08S2-PS))
- QSFP HBA (Model: ACS-63200NT(Z1M))
- QSFP PCIe Cables

Also includes software setup information for:

- Switch management software: Switch Web GUI
- SAN management software: SANit

Accusys, Inc.,

January 10, 2013
Version: V1.0



 **ExaSAN**
PCIe Storage & Switches

User Guide

PREFACE

Notice

The product features and specifications described in this guide are subject to change without notice.

The manufacturer shall not be liable for any damage, or the loss of information resulting from the performance or use of the information contained herein.

About This Guide

Congratulations on your purchase of the ExaSAN (pronounced X-sa-SAN) switch “SW16”, a revolutionary high bandwidth PCIeexpress based SAN switch, specifically developed for post production environments. It delivers stability, exceptional performance, and scalable capacity at a very affordable cost.

This guide also contains instructions for installing and using the ExaSAN PCIe switch, RAID (Redundant Array of Independent Disks) technologies, SANit (SAN management software) and RAIDGuard X (ExaSAN’s RAID management software).

If you are new to ExaSAN switch, RAID, SANit and RAIDGuard X, this guide will help you become familiar with these technologies, and assist you in setting up and using ExaSAN storage with the SW16. If you are already familiar with these technologies, use this guide as a reference for implementing your ExaSAN SAN solution to achieve maximum performance and reliability.

For details of hardware installation, setup, configuration and considerations, see

- Chapter 1, “Introducing ExaSAN PCIe2.0 Switch SW16”
- Chapter 2, “Preparing to setup an ExaSAN SAN environment”
- Chapter 3, “Installing ExaSAN SAN environment”
- Chapter 4, “Using Switch Web GUI & SANit”
- Chapter 5, “RAID Overview”
- Chapter 6, “Appendix”

Guide to Conventions

Inside the double boxes is the important information that users should be aware of:

Caution

This indicates the existence of a potential hazard that could result in personal injury, damage to your equipment or loss of data if the safety instruction is not observed.

Note

This indicates useful tips on getting the most from your Accusys ExaSAN RAID system.

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

ExaSAN SW16 User Guide

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1. Introducing ExaSAN PCIe2.0 switch

1. Introducing ExaSAN PCIe2.0 switch

1.1 System Overview

Your new ExaSAN (pronounced “X-sa-SAN”) PCIe 2.0 switch “SW16” is one of a family of PCIeexpress based storage and switch solutions from Accusys capable of transferring data at up to 20 Gb/sec per port. The rack-mount form factor SW16 can be used in SAN (Storage Area Network) storage solutions for the post production and broadcasting industries that require high bandwidth shared storage.

1.1.1 What is the ExaSAN Solution

Developed by Accusys, Inc., a worldwide leader in RAID (Redundant Array of Independent Disks) storage systems, ExaSAN is a family of storage and switch products that take advantage of well known PCIe (PCI Express) technology speeds, standards, and roadmap. The current ExaSAN products employ PCIe2.0 protocol that provides a 5 Gb/sec per lane transfers. With 4 lane QSFP (Quad SFP) connectors and cables, ExaSAN can transfer up to 20 Gb/sec using single port QSFP HBA's. With a dual port QSFP HBA, data transfers up to 40 Gb/sec are available to the connected workstation. The ExaSAN total solution, including its complete line of rack mount systems, tower systems, PCIe switch systems and accessories, puts the benefits of shared, scalable, and high-performance storage within easy reach of organizations with limited IT resources and budgets.

Post production work including non-linear editing (NLE) requires high bandwidth storage to quickly move the volume of data being processed, and ExaSAN storage solutions meet those demands. The high bandwidth provided by ExaSAN technology allows the client to complete editing tasks in a much shorter time to save time and money. ExaSAN storage is a complete solution that includes the PCIe RAID system, cable and HBA card.

Figure 1 below depicts the ExaSAN B08S2-PS system solution architecture in a DAS environment.



Figure 1: B08S2-PS DAS environment

Whether it's collaborative video editing in a post-production workgroup, or a shared research project in a university, the ExaSAN solution offers a range of performance levels and storage capacities that scale to meet the needs of small-to-medium-sized organizations. Equally important and useful is its integrated design, centralized administration and monitoring, and a suite of built-in management tools; which eliminate the need for a staff of experts to install and maintain a SAN for the workgroups.

Figure 2 below depicts a typical ExaSAN system solution architecture in a SAN environment.

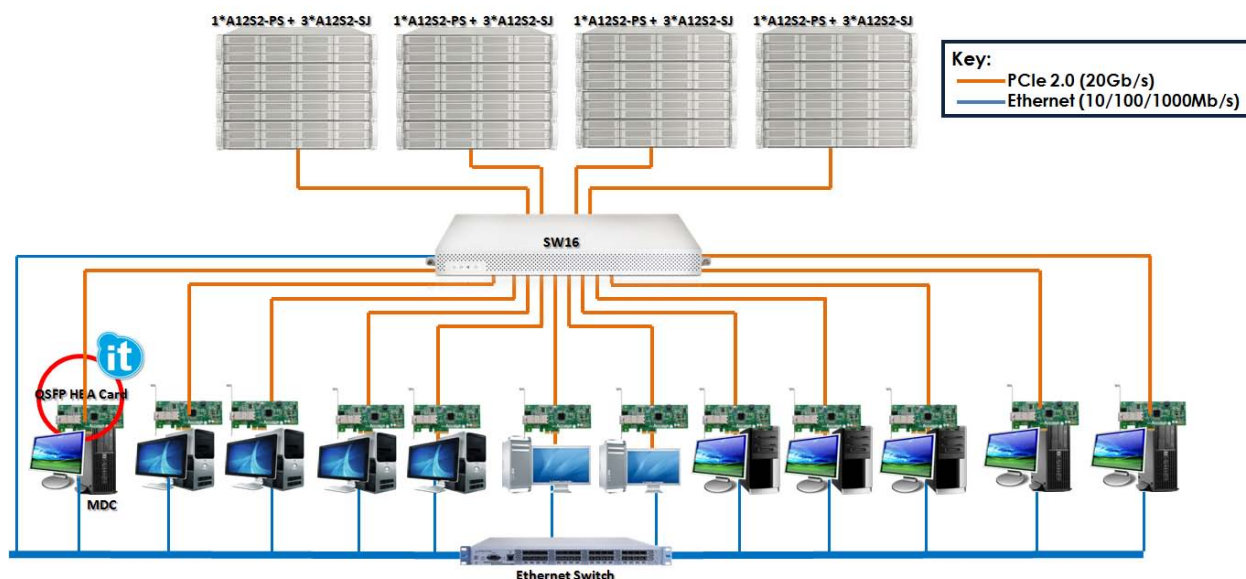


Figure 2: SAN environment with SW16

1.1.2 What is the ExaSAN Switch SW16

The ExaSAN SW16 is PCIe 2.0 SAN switch in a 1U rackmount enclosure employing the latest PCIe2.0 technology with support for 12 PCIe clients and 4 PCIe RAID storages. The total bandwidth of SW16 is up to 80 Gb/s.

Your ExaSAN SW16 switch package consists of the components listed below.

1. ExaSAN SW16 PCIe 2.0 switch, see Section 1.1.3.1.
2. Ethernet cable, ExaSAN DVD, screws for rack mount, rack mounting brackets and Power cord.
3. QSFP-PCIe 2.0 Host Bus Adapter, compatible with PCIe 2.0 and 1.1 slots on the host server, see Section 1.1.3.3
4. QSFP-PCIe 2.0 2M copper cable for connecting the HBA installed in the host to the RAID. Additional cables are optional, see Section 1.1.3.4

Note that item 1 and 2 are Accusys-supplied equipment as part of the SW16 package. Item 3, item 4, the host server, ExaSAN RAID systems and HDD need to be purchased separately. Please contact your System Integrator/Value Added Reseller if you need assistance in purchasing these components.

1.1.3 ExaSAN SAN environment Components and Accessories

This section provides detailed description of each system component and accessory included in the ExaSAN SAN environment.

1.1.3.1 ExaSAN PCIe 2.0 SAN switch – SW16

The SW16 is a rack-mount PCIe 2.0 switch supporting up to 12 clients and 4 PCIe RAID storages.



Figure 3: SW16 Front view

1.1.3.2 ExaSAN PCIe 2.0 Storages

To setup an ExaSAN SAN environment, users need an ExaSAN switch, ExaSAN storages, cables, HBAs, and SAN software

Note:

The hard drives installed in A12S2-PS or B08S2-PS should be purchased separately. Please contact your System Integrator/Value Added Reseller if you need assistance in purchasing these components.

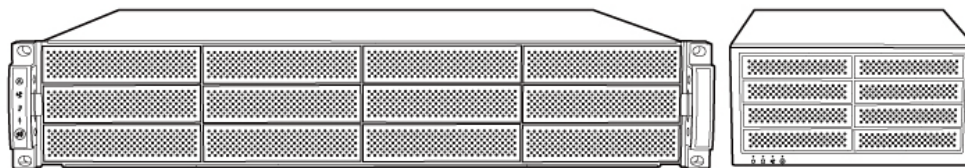


Figure 4: ExaSAN PCIe 2.0 Storages (A12S2-PS & B08S2-PS)

1.1.3.3 ExaSAN QSFP Host Bus Adapter (ACS-63200NT)

The ExaSAN QSFP HBA (Figure 5) requires an available PCIe x4, x8, or x16 slot in your client system. Note that the PCIe slots on some motherboards are for graphics cards only. (Check your motherboard documentation or verify with the motherboard vendor for compatibility. Also note that some PCIe x4 or x8 slots only share or run at PCIe1.1 speed, so please be advised to consult your motherboard documentation to take advantage of ExaSAN speeds

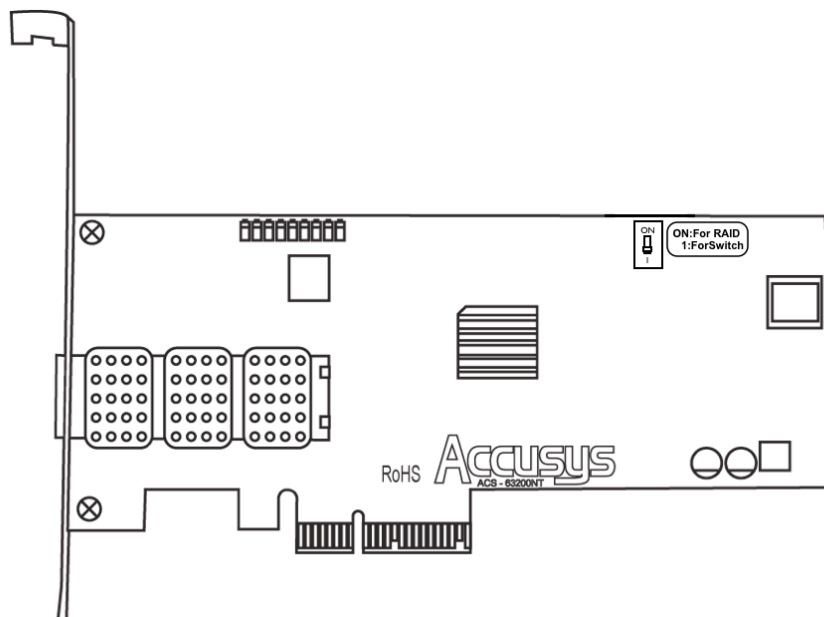


Figure 5: ACS-63200NT (Z1M) HBA card

1.1.3.4 QSFP (Quad Small Form-factor Pluggable) PCIe Copper or Optical Cables

A 2m QSFP Copper Cable is included in your ExaSAN storage system package. You can use it to connect it to one of the four storage ports on SW16.

Optional QSFP cables (Figure 6) are available at varying lengths in copper or optical

1. 2m QSFP Copper Cable, (black in color)
2. 5m QSFP Copper Cable, (black in color)
3. 10m QSFP Optical Cable, (orange in color)
4. 30m QSFP Optical Cable, (orange in color)
5. 50m QSFP Optical Cable, (orange in color)
6. 100m QSFP Optical Cable (orange in color)



Figure 6: QSFP optical cable

1.1.3.5 Power Cord & Power convertors

Two AC Power Cords (Figure 7) are included in the SWF16 package. We also provide three types of power convertors – EK, AU, EU, in addition to the US standard power cord.

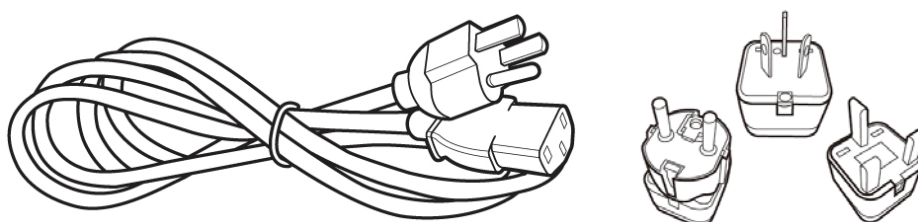


Figure 7: Power cord & Power convertors

1.1.4 Key Features of SW16

1. Host Interface

- PCIe2.0 5Gb/s x4 lanes, for transfers up to 20Gb/s. 12 ports

2. Storage Interface

- PCIe2.0 5GB/s x4 lanes. 4 ports

3. Supports most main-stream SAN management software

- Support cross-platform SAN management software to build up a MDC for PCIe SAN environment
- Support most main-stream SAN management like SANit, MetaSAN, Xsan, Fibrejet and etc...

4. Management

- Web-based GUI, cross-platform executable
- Monitor and control via Web GUI of enclosure components
- LED indicators for enclosure status
- Event log download from Web GUI
- Supports both in-band and out-band management

- Supports RAID management by EFI and BIOS
- Supports firmware upgrade via GUI
- Supports SNMP
- Supports remote management

5. Enclosure

- FAN, Power, Temperature status LED indication in the front faceplate.
- Dimensions: 43.8mm(H) x 447mm(W) x 410mm(L)
- Weight : 6.3 Kg(13.89 lb)

6. Supported OS

- Windows XP/2003/Vista/2008 and Windows 7(32/64-bit, Miniport and Storport driver, WHQL certified), or above
- Linux: Red Hat, SUSE, Fedora, CentOS, Debian, etc.
- MAC: OS X(10.5, 10.6, 10.7, 10.8 and later)

7. Operating Conditions

- Humidity: 5% - 85%
- Operating Temperature: 0degC – 40degC
- Certification: RoHS, UL, CE, FCC, C-Tick, BSMI

8. QSFP HBA

- 20Gb/s PCIe2.0 x4 HBA
- Short, low profile, form factor card
- Dimension 110 x 68.9 mm
- Standard bracket (low profile available and included)

9. QSFP Cable

- Connector PCI Express 2.0 x4
- Copper cable lengths: 2M (standard; included with ExaSAN storages),
5M (optional)
- Optical cable lengths: 10M, 30M, 50M, 100M(all optical cables are optional)

1.2 Unpacking the System

Your ExaSAN SW16 is shipped in special packaging (Figure 8) to provide protection during transportation, as well as to facilitate simple and safe removal from the carton(s). Note that different components may be shipped in separate cartons.

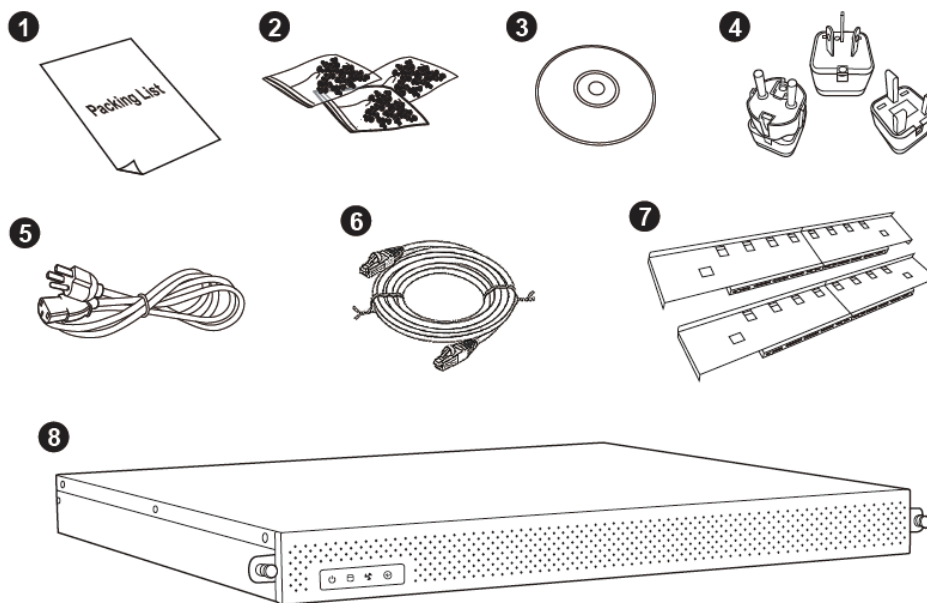


Figure 8: SW16 packing list

1.2.1 What Is In Your Order

Your ExaSAN System Integrator/Value Added Reseller should have helped you assess, identify, and order all necessary system components and accessories not included in the SW16 packaging. If you ordered the complete SW16 system solution, your order includes everything described in Section 1.3.

There are generic system components and accessories required by the ExaSAN solution but not included. Please refer to Section 1.5, “What Else You Need” for additional information.

1.2.2 Checking the Equipment you’ll need

Section 1.1.3 has a hardware list of all the equipment you’ll need to set up the ExaSAN SAN environment. Check carefully against that list; verify that you have all of the system components and accessories before commencing hardware installation.

1.2.3 Unpacking

Follow the steps below to open the carton and remove the system from its packaging. .

1. Read Chapter 2, “Preparing to Install ExaSAN SW16”
2. Remove any packing material on the outside of the carton.
3. Cut the tape at the top of the carton. If you use a long cutting instrument, exercise care to avoid damaging the content inside.
4. Open up the top flaps of the carton to reveal the content inside. Remove the protective foam on top of the system. Carefully remove each item from inside the carton.

1.3 What's in the Box

Carefully check your carton contents against the included packing list, or the inside flap of the box, and your original purchase order. You should have the items as described in the sections below.

Contact your Accusys System Integrator/Value Added Reseller or Accusys Customer Service (see Appendix C “Customer Service and Technical Support” for more information) to report any missing item.

1.3.1 SW16 System

Your ExaSAN RAID disk system carton contains the following items:

1. PCIe 2.0 SAN switch system – SW16 (x1)
2. Accessories package (x1)

1.3.2 SW16 Accessories

The Accessories package includes the following items. These items can also be ordered and shipped separately from Accusys.

1. Packing list (x1)
2. Screw pack (x3)
3. ExaSAN installation DVD (x1)
4. Power converter UK, EU, AU to US (x3)
5. AC power cord (x2)
6. Ethernet cable (x2)
7. Rack mount bracket set (x1)

1.4 Your SW16 at a Glance

This section helps you get familiar with the physical appearance of your ExaSAN SW16

1.4.1 ExaSAN SW16

1.4.1.1 SW16 Front Panel & LED Indicators

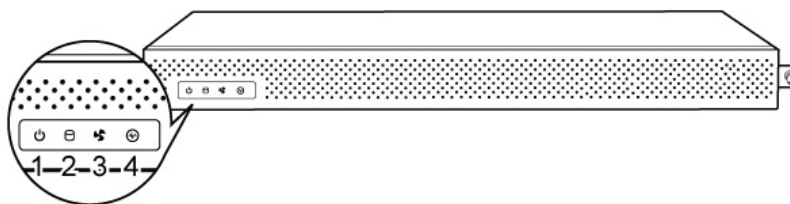


Figure 9: SW16 front view

Item	Name	Color	Description
1	System Power	Blue	Flashing Blue indicates the host is booting. Solid Blue indicates the subsystem power supplies are working normally. No Light indicates the power is off
2	Access Status	Blue	Flashing Blue indicates the host is accessing. No Light indicates standby or no power
3	Hardware Status	Blue/Red	Solid Blue indicates the hardware included fan, power supply are working normally. Solid Red indicates some hardware failed. Please check the switch web GUI for more detailed information.

			No Light indicates the LED failed or power off
4	Link LED	Blue	Indicates the controller status • Flashing Blue indicates the controller is booting for link • Solid Blue indicates the controller is ready for link to a client. • No light indicates the controller is inactive.

1.4.1.2 Beeper Codes

Controller Status	Beeper mode
Turn on the switch (SW16)	One short beep
System kernel Panic	Continuous beeping
Fan Failure	Three short beeps (Repeating)
Fan speed is under 5500RPM	Three short beeps (Repeating)
Power Failure	Three short beeps (Repeating)
Temperature Failure	Three short beeps (Repeating)

Note

Three short beeps indicate multiple possible faults, please check the switch web GUI to isolate the fault condition.

1.4.1.3 SW16 Rear Panel

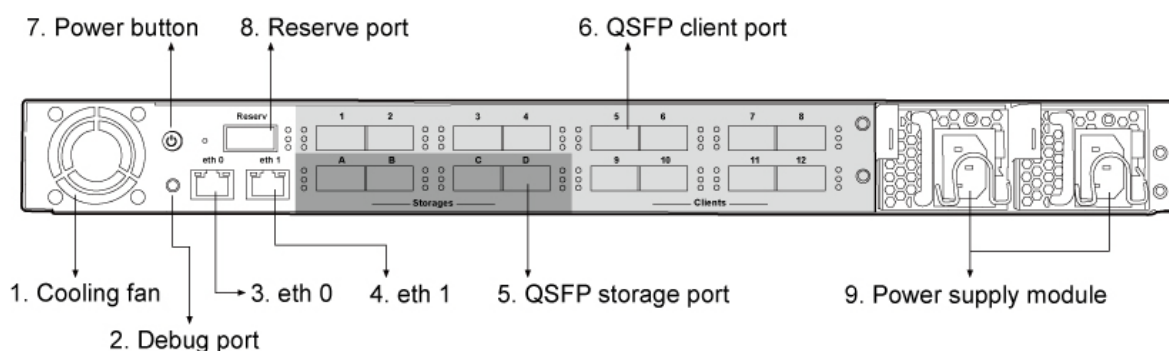


Figure 10: SW16 back view

No.	Name	Description
1	Cooling fan	Maintains “SW16”, the switch away from overheating.
2	Debug port	Connects to maintenance equipment. This port is only for testing or debugging in Accusys internally.
3	eth0 Ethernet port (Management Port)	Controls web GUI of the SW16 through this port. - The default IP is “192.168.0.25” - The port support DNS function but we don’t recommend using DNS function here. - When the network connection is normal, the left LED would stay on orange light and the right LED would be flashing on green light.
4	eth1 Ethernet port (SAN Private Port)	Setups as a private port for MDC - The default IP is “192.168.1.25” - The port doesn’t support DNS function. - When the network connection is

		normal, the left LED would stay on orange light and the right LED would be flashing on green light.
5	QSFP storage port	Connects the ExaSAN series PCIe 2.0 storage (A12S2-PS or B08S2-PS). Access LED (top): • Flashing Blue indicates storage accessing is in progress. • No light indicates no storage accessing. Link LED (middle): • Solid Green indicates the controller is connected normally. • Flashing Green indicates the controller downgrade to less lanes of PCIe • No light indicates “no power” or “no connection” to the ExaSAN storage. Fail LED (bottom): • Solid Red indicates the port is connected to a client (wrong connection type). • No light indicates “no power” or “no error”.
6	QSFP client port	Access LED (top): • Flashing Blue indicates storage accessing is in progress. • No light indicates no storage accessing. Link LED (middle): • Solid Green indicates the controller is connected normally.

		• Flashing Green indicates the controller downgrade to less lanes of PCIe • No light indicates “no power” or “no connection” to the ExaSAN storage. Fail LED (bottom): • Solid Red indicates the port is connected to a client (wrong connection type). No light indicates “no power” or “no error”.
7	Power button	Control the power of SW16 • Push the button to turn on the power of SW16. • Push the button to turn off the power of SW16 and it would be shut down automatically. • Push the button for 5 seconds to shut down the power of SW16 Immediately.
8	Reset hole	If you want to reset the all setting of the SW16, you could use a needle or pin to push into the hold for <u>13 seconds</u>. Then you'll hear two short beeping “bi-bi” and wait for the SW16 restarting. The whole setting would go back to default. Caution: <i>If you push reset hole but are still connected to the clients, you might damage important data in the SAN.</i>

9	Reserve port	This QSFP port is reserved.
10	Power supply module	Connects to power sources with two power cord to the redundant modules. If one power failed, the SW16 can still work normally.

1.4.2 ExaSAN QSFP Host Bus Adapter (HBA) and LED Indicators

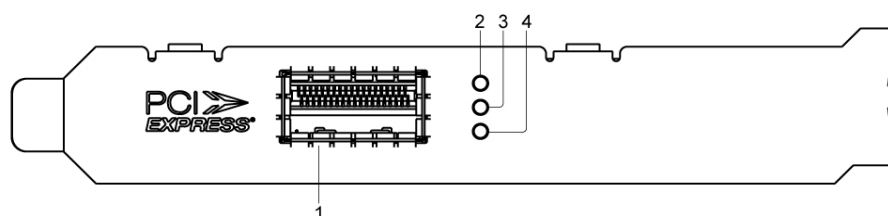
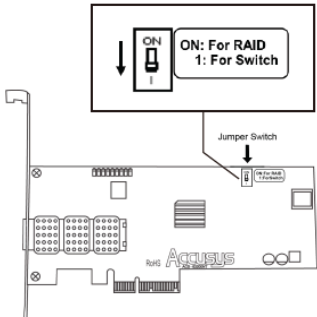


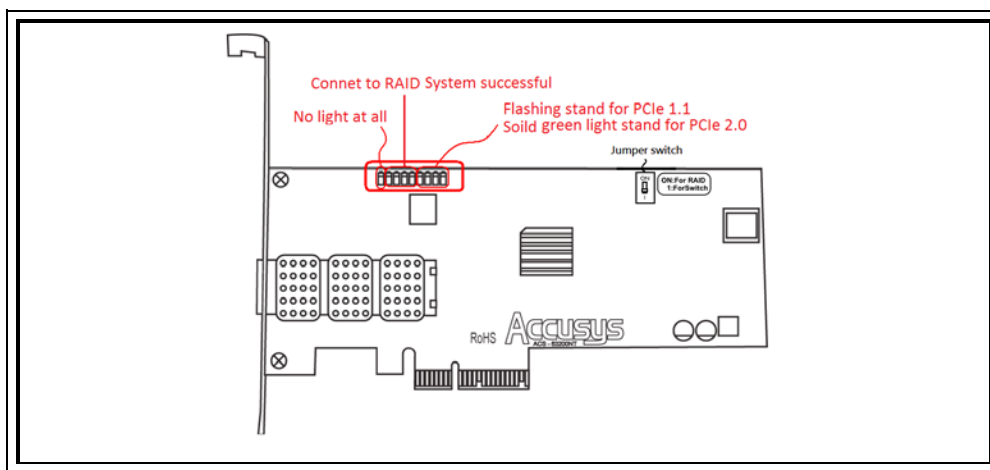
Figure 11: HBA LED indicators

No.	Name	Description
1	QSFP Connector Port	For connection with one of the Host Module Ports on the switch rear panel or B08S2-PS directly.
2	Jumper Switch LED Indicator	Off (no light at all) indicates the jumper pin in question is set to “On” position. In this state, the card is ready for DAS direct connection with ExaSAN storages, “A12S2-PS or B08S2-PS”. Solid amber indicates the jumper pin in question is set to “1” position. In this state, the HBA card is ready for a SAN connection. See Section 3.1.2, “Installing the HBA Card,” for additional information.

		
3	Link LED Indicator	• Solid green indicates connected PCIe 2.0 link; • Flashing green indicates connected PCIe 1.0 link or downgraded speed. • Off (no light) when there is no link or indicates a link with trouble.
4	Access LED Indicator	Flashing blue while there are data access activities with the connected device. No light indicates the host is not accessing

Note

The eight LED indicate the connection status of the HBA (The LED closest to the bracket does not light up.) If you have properly connected the HBA to the B08S2-PS RAID controller, one set of 4 consecutive LEDs will be constantly lit. The second set of 4 consecutive LEDs indicates the type of PCIe connection - flashing LEDs indicate a PCIe Gen1 connection, while steady LEDs indicate a PCIe Gen2 connection.



1.5 What Else You Need

ExaSAN software requires suitable hardware and accessories to fully take advantage of this software. The following section covers all of the software and hardware which you may need to purchase separately. Please inquire with your ExaSAN reseller for more details.

Note

Accusys shall not be liable for products mistakenly purchased and/or unsuitable use of ExaSAN items.

SAN environment

The key purpose of a SAN (Storage-Area-Network) environment is to allow sharing of storage connected to the switch among the various clients connected to the switch to take advantage of collaborative workflows and achieve storage purchase efficiencies. To set up and manage read/write access to the shared storage volume and keep track of metadata of what files were written where, when, how much was written, by who, etc, ExaSAN's SANit SAN management software along with MDC is required to keep order.

Please kindly see the below diagram for more detail.

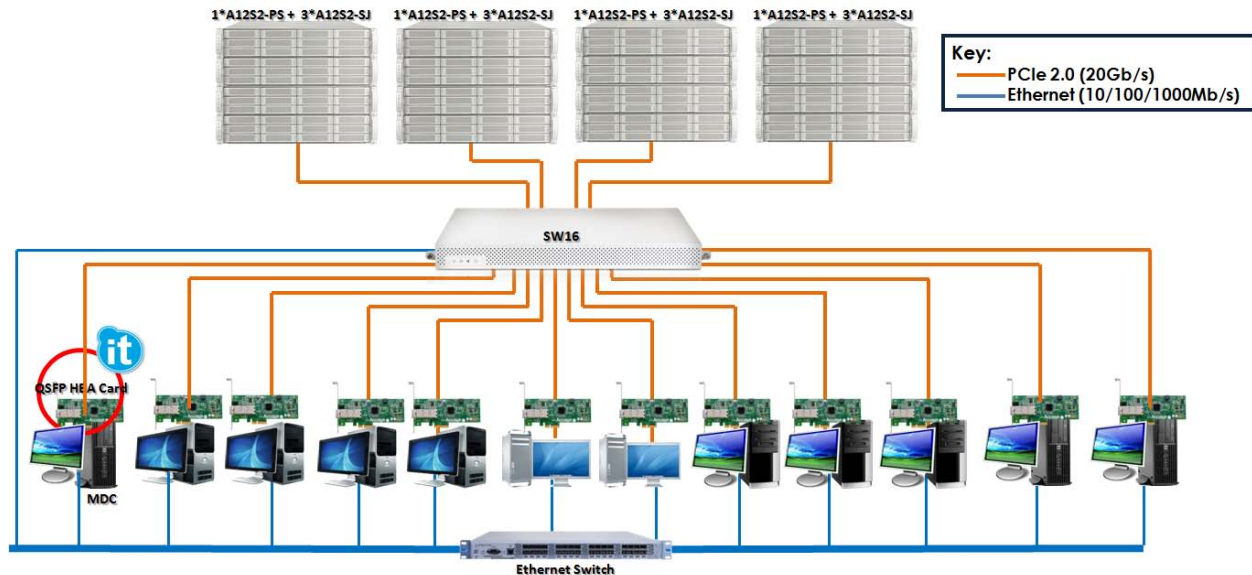


Figure 12: ExaSAN SAN environment

Hardware

Accusys recommends getting the advice from your reseller or distributor regarding setting up the SAN to achieve the objectives you are looking for

1. System computer for MDC (metadata controller), managing the metadata of the SAN environment. We recommend HP or Supermicro server, HP Z series, Dell workstations or Apple Mac Pro workstations.

WARNING:

The MDC is very important in a SAN configuration. If the Metadata stored in the MDC is lost or damaged, access to data stored in SAN storage will be lost.

2. System computer for clients, running the editing, finishing, etc., applications you will use. We recommend HP Z series, Dell workstations or Apple MacPro workstations.
3. Storage for ExaSAN. We recommend A12S2-PS for speed, capacity, scalability, and rackmount applications. We recommend B08S2-PS for speed, small footprint, or transportable considerations.
4. Ethernet switch and cables : An Ethernet switch is required to provide a private network for SAN management software managing the SAN configuration. It does not need to be connected to an external network. If your workstation needs the Ethernet connection to an external network for web or email access, we suggest using a separate network. Please choose good quality products, protected by manufacturers' warranty to assure the safety and stability of the SAN network.

2. Preparing to Install ExaSAN SW16

2. Preparing to Install ExaSAN SW16

To ensure safe and smooth operation of your ExaSAN SW16, it is essential that you choose an appropriate location for the system, and provide an appropriate operating environment and adequate power for all components of the system. As you plan for installation, follow the guidelines below to ensure that the system and its environment are safely and appropriately positioned for efficient operation and service.

2.1 Precaution for Handling the System

Take the following precautions to avoid damage to the system or potential injury to you.

1. Prepare a flat, sturdy surface before removing the system from its packaging. The table or cart that will hold the system should be as close as possible to the system's carton.
2. Ensure that all power switches have been turned off and all power cords disconnected to prevent personal injury and damage to the hardware.
3. Static electricity can damage electronic components of your system. Follow the guidelines below to avoid such damage:
 - a. Work in a static-free environment
 - b. Wear a grounded anti-static wrist strap
 - c. Store uninstalled components in anti-static bags
 - d. Handle circuit boards by their edges and avoid touching chips and connectors

2.2 Choosing the Location for the System

The ExaSAN SW16 is designed as a rack-mount solution. Depending on where your rack is located, you should keep the following points in mind when determining where to place your system.

1. Measure the amount of available space in the rack. The amount of space required for the SW16 is 1U rack space. (dimensions are L410mm x W447/480.2mm x H43.8mm)
2. Measure the distance between any two components that need to be connected via cable(s). This measurement will help you determine the length of the required cable(s). Or if you've already purchased the cables, determine the proximity of the components in question.
3. Leave sufficient room, at least two inches, around the unit to allow air ventilation.
4. Do not block or cover any of the ventilation holes in the front and back panels of the unit. Consistent airflow is essential to keeping the system operating efficiently.
5. Allow additional room at the front and back of the unit for service.
6. The ExaSAN SW16 uses several cables and cords. It's a good idea to determine how they will be arranged at the rear of the system, and where the cables will be routed to connect to the host systems and RAID disk systems.

2.3 Electrical Power

At your chosen location for the ExaSAN SW16, make sure that the electrical circuitry and power outlets are sufficient for the combined power needs of all hardware

components. To plan for safe and adequate power to the system, follow these guidelines:

1. Check the documentation for all hardware components at the chosen location to determine their power requirements. Then make sure that the available power supply for that location is sufficient for the planned components.
2. If you need assistance determining the power needs of the components at the chosen location, consult an electrical expert who is familiar with your facility.
3. When possible use surge protectors or power conditioners as part of the installation.
4. When planning for electrical power, make sure you have more power than the total power requirements specified for all components. Also make certain that the power load is distributed evenly among circuits to that location. Consult an electrician or other expert if you need assistance with planning for the power needs of your components.
5. When possible, plug the redundant power supplies onto different circuits.
6. Make sure that the power outlets for all hardware components are grounded according to local and national standards. Consult an electrician if you need assistance with grounding.

2.4 Operating Environment

The operating environment for the ExaSAN SW16 must meet certain requirements:

1. Verify that the temperature range of the chosen location is within the limits established for the system and all other components.
2. Make certain that the chosen location has adequate ventilation to maintain the necessary temperature range.
3. If there are multiple hardware components installed at the chosen location, consider additional cooling measures to assure efficient operation of the system and other components.
4. Environment parameters:
 - a. Operating temperature: 0°C to 40°C (32°F to 104°F)
 - b. Non-operating temperature: -40°C to 70°C (-40°F to 158°F)
 - c. Operating humidity: 5-85%, non-condensing
 - d. Storage humidity: 0-95%, non-condensing

2.5 Security

To ensure the security of the ExaSAN SW16, make certain that the chosen location meets your security requirements.

3. Installing the ExaSAN SW16

3. Installing the ExaSAN SW16

Follow the steps in this chapter to prepare your ExaSAN SW16 for installation.

Below is an outline of the installation steps for you to follow.

- Step 1 Unpacking the switch, inspecting the packing list
- Step 2 Installing disk drives, please refer to the A12S2-PS or B08S2-PS User Manual for instructions
- Step 3 Installing HBA (refer to the section 3.1.1)
- Step 4 Connecting SW16 to the ExaSAN storages (refer to the section 3.1.2)
- Step 5 Connecting SW16 to the Host Systems (refer to the section 3.1.3)
- Step 6 Connecting the Switch LAN (refer to the section 3.1.4)
- Step 7 Power-on sequences (refer to the section 3.2.1)
- Step 8 Create Array for SAN Configuration through switch web GUI.
- Step 10 SAN Configuration through SANit GUI menu.

3.1 Hardware installation

Follow the instructions in this section to hook up all your hardware components of the ExaSAN SW16. Do not turn the power of any individual component on until instructed. When all components are properly connected, follow the instructions in section 3.3.1 “Powering On” to turn the components on in the prescribed order.

3.1.1 Installing the HBA Card

Before the ExaSAN SW16 is ready to be connected and powered on, you must install the HBA card in the workgroup client system. The HBA card is compatible with PCIe x4, x8, and x16 slots. If a choice is given, use the fastest PCIe slot available. Although the HBA card is compatible with both PCIe 1.1 and 2.0 standards, the latter is required to achieve 20Gb/s speeds..

Caution

PCIe slots on some motherboards are for graphics cards only.
Check with the motherboard vendor for compatibility.

Follow these steps to install the card in each host system:

1. Make sure that the client system is turned off.
2. Open the client system’s outer casing cover, check with your vendor documentation for instructions if necessary.
3. Re-position the HBA card so that you are facing jumper switch as shown below. You can use the jumper switch to configure the HBA for DAS or SAN usage. Set the jumper switch before installing into the host
 - DAS mode: When the switch is in the “On” position, the HBA card is enabled for RAID (Direct-Attached Storage B08S2-PS) mode.
 - SAN mode: In the “1” position, the HBA is enabled for switch (SAN) mode.

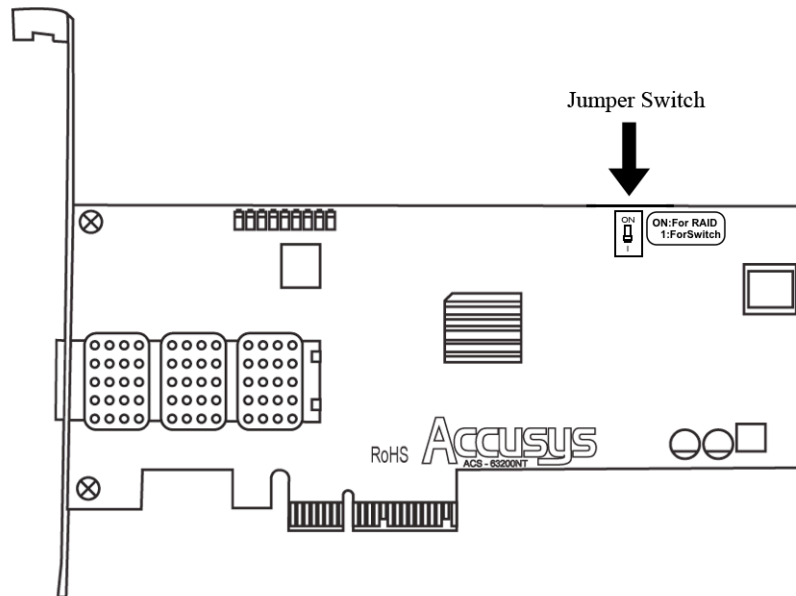


Figure 13: HBA card's jumper switch

4. Locate the available PCIe slot; remove the blank plate if one is present, save the screw for later use.

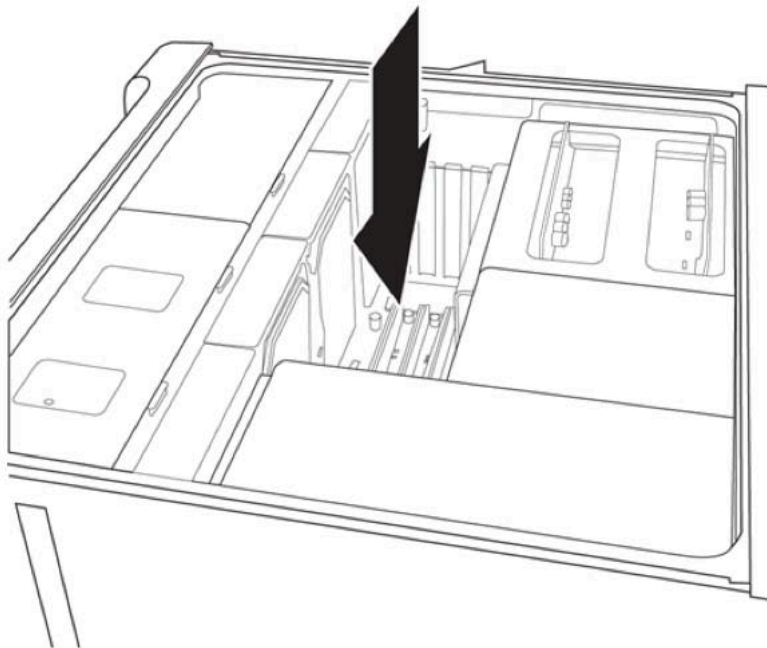


Figure 14: Install HBA card

5. Position the connector of the card over the slot, insert the connector into the slot, press gently but firmly until it is securely seated.

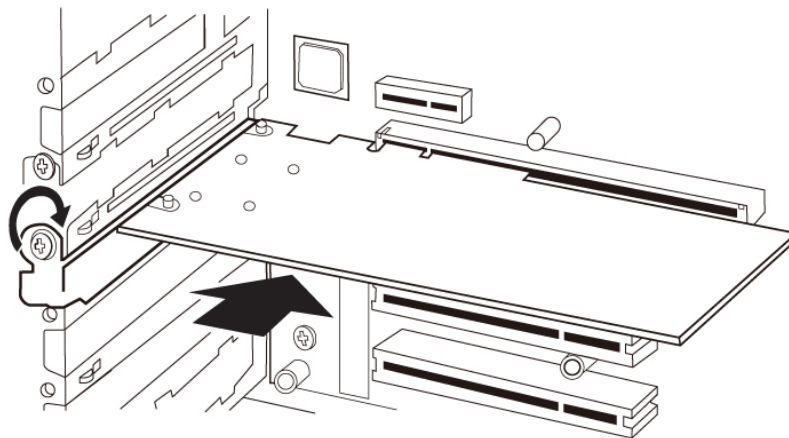


Figure 15: Install HBA card on a PCIe slot

6. Use the screw that you saved in step 2 to secure the metal bracket of the card to the system case. David, the image looks like a PCIe x16 card
7. Replace the outer casing cover.

3.1.2 Connecting SW16 to the ExaSAN storages

1. Connect to the ExaSAN storage (B08S2-PS or A12S2-PS) with a QSFP PCIe cable. Insert one end of the QSFP cable into the host port on the rear panel of the ExaSAN storage. Your cable connector is securely plugged when you hear a “click” If you do not hear or sense a click, please re-insert the QSFP connector. If you need to unplug the cable, pull the ring on the connector firmly until it is detached from the port. Note that the QSFP used in the photo illustration below is a QSFP optical cable. If the distance between the switch and the host system is less than 2 meters in your case, the included QSFP copper cable will suffice.

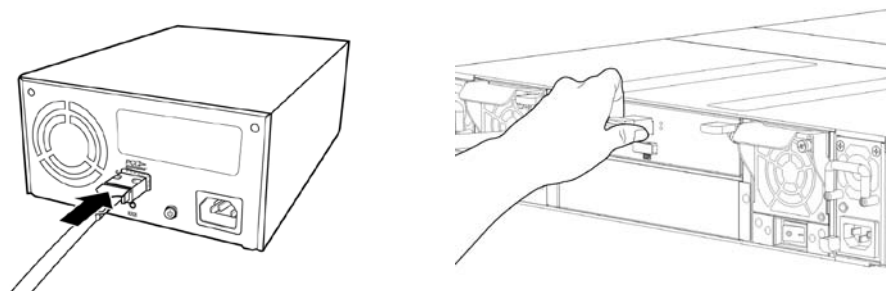


Figure 16: Connecting PCIe cable to B08S2-PS or A12S2-PS

2. Insert the other end of the QSFP cable into the storage port on the ExaSAN SW16. The cable connector is securely plugged when you hear a click.

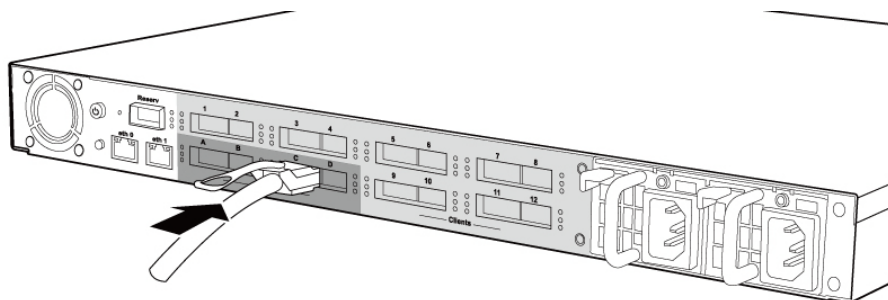


Figure 17: Connecting the PCIe QSFP cable to the storage port (black color)

3. Plug a power cord into the AC power-in port in the storage system; do not turn power on yet.

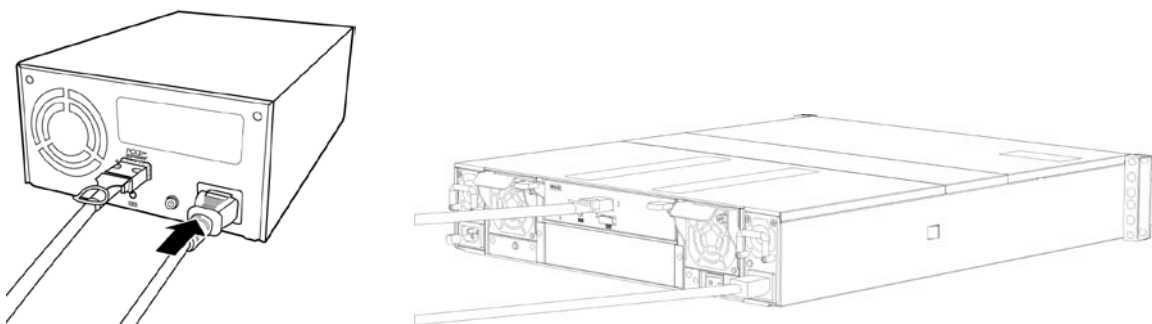


Figure 18: Connecting the power cord to the storage (B08S2-PS or A12S2-PS)

Caution

Once powered on, Do **NOT** remove the QSFP PCIe cable when in use to avoid data loss and corruption.

3.1.3 Connecting SW16 to the Host systems

1. Insert the end of the QSFP cable into the PCIe port on the HBA card, which you installed on the host system earlier in Section 3.1.1. The cable connector is securely plugged when you hear a click.

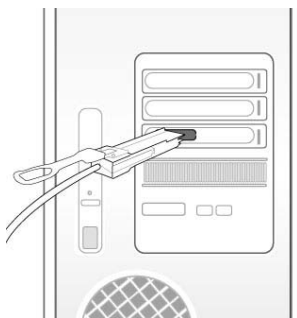


Figure 19: Connecting the QSFP cable to a host system

2. Insert the other end of the cable into the client port (orange color) on the SW16.

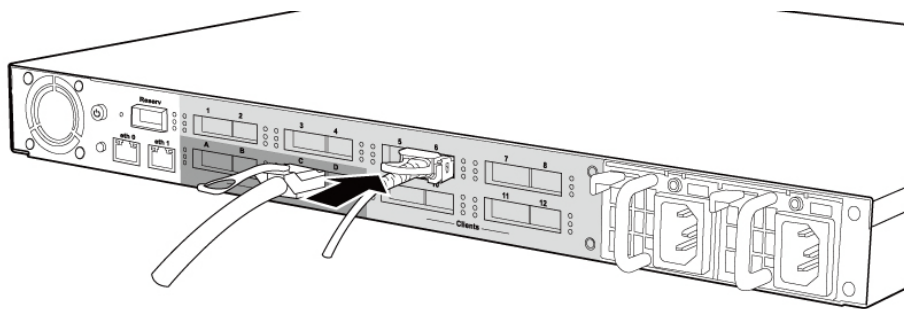


Figure 20: Connecting the PCIe QSFP cable to the client port

3.1.4 Connecting the switch LAN and power cord

1. Insert the Ethernet cable into eth0 (management port) and eth1 (private port for MDC) on the SW16. The default IP addresses are 192.168.0.25 and 192.168.1.25., respectively.

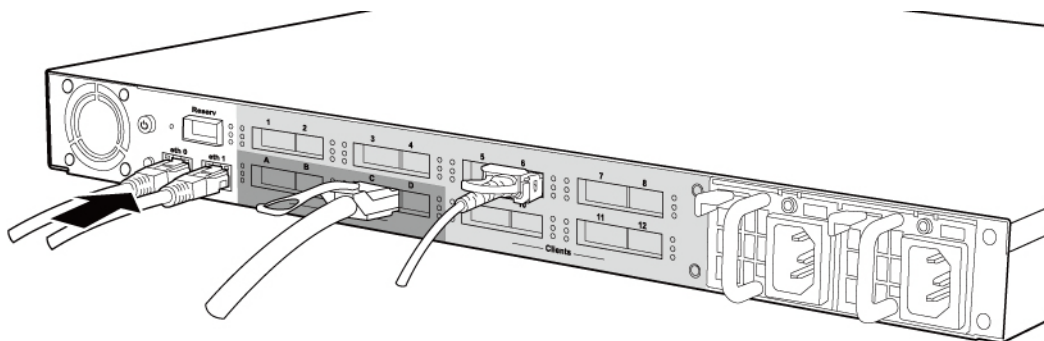


Figure 21: Connecting the Ethernet cable to eth0 and eth1

2. After connecting the Ethernet cables, please connect the power cords to the both power supply modules.

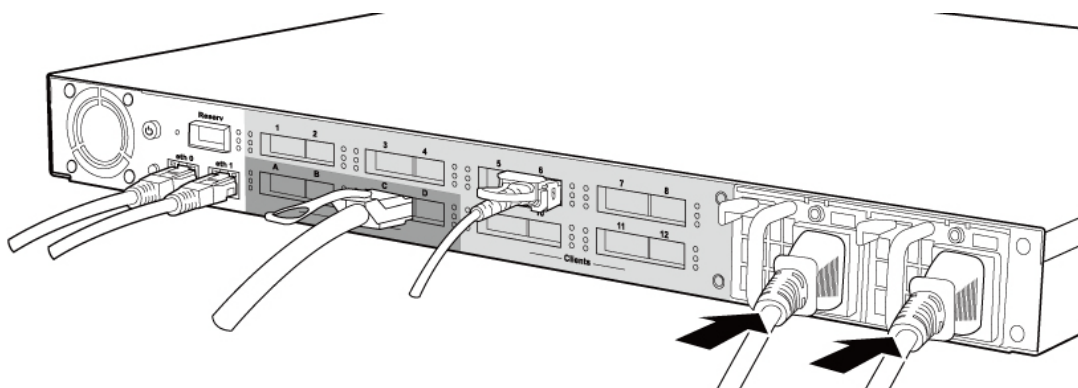


Figure 22: Connecting the power cords to the power supply module

Note

SW16 will beep unless both power cords are plugged in.

3.2 Powering the System On and Off

3.2.1 Powering On

Before powering on, make sure that all cables and cords are properly installed and connected.

1. Press the power button on the rear panel of storage first. Wait until all the LEDs on the left handle turn blue, then,
Turn power on for the ExaSAN SW16 by switching on the Power button. Wait for the “Link LED indicator” (refer to Section 1.4.1.1, “SW16 Front Panel”) to turn into a solid blue state. Soon thereafter, you will hear 3 beeps signifying that the clients can now be powered on. You might hear other beeps, but the 3 beeps are significant, indicating that it has fully booted up.
3. Turn on clients, MDC first (for non-SW16 ExaSAN switches), then the remaining client workstations.

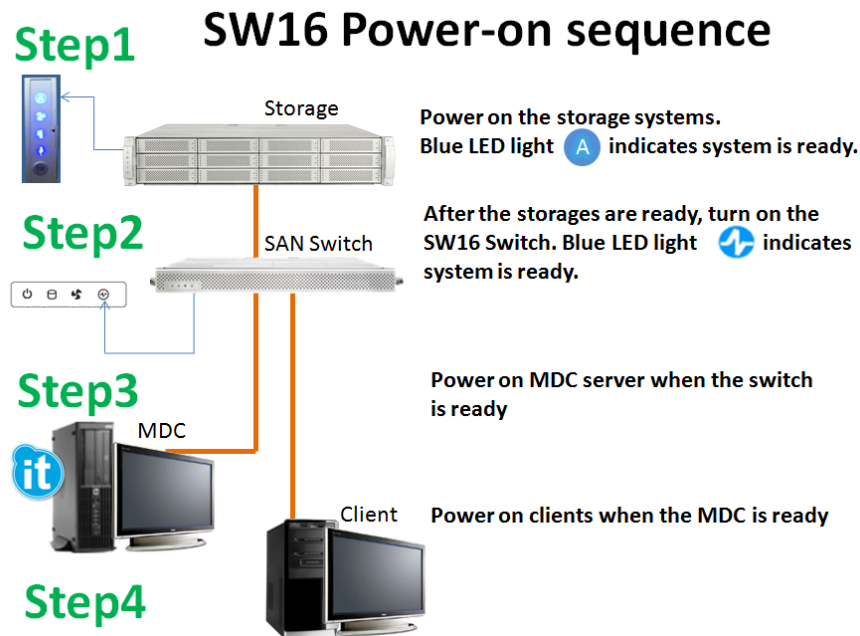


Figure 23: power on sequence

Caution

It is important to follow the correct Power On sequence. Failure to do so may result in some features not functioning properly.

3.2.2 Powering Off

If you need to power off the entire system, such as when switch or RAID system requires firmware updates, adding a RAID system or client computer, power off in the reverse order of Powering On. Before turning off the SW16, please follow the sequence to turn off the MDC, the all the client computers. Wait for the MDC and the all client computers to shut down. Then the SW16, and then the ExaSAN storage systems.

During RAID initiation or disk drive rebuilding, you can turn off the client computers only and leave the SW16 and storages powered on.

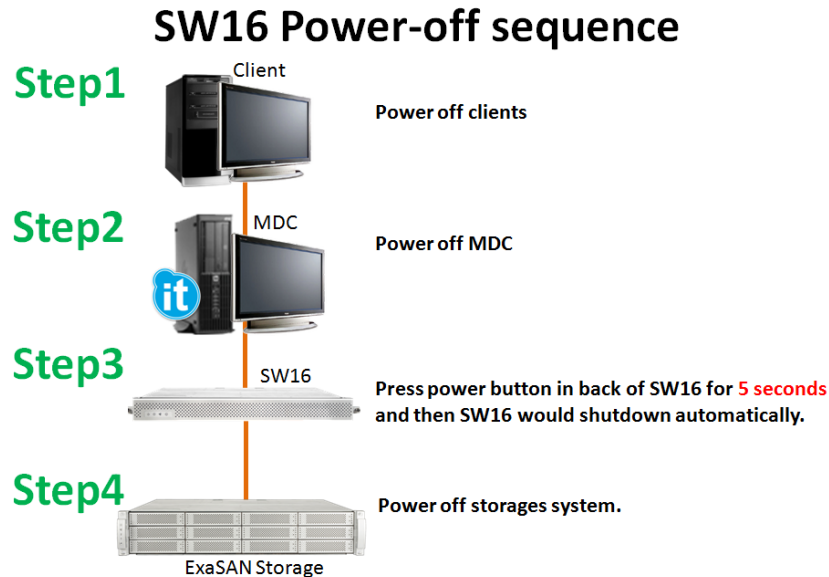


Figure 24: power off sequence

3.3 Installing the Installer Package

3.3.1 Before You Start

Before the installer package can be installed on Windows, Mac, and Linux platforms, makes sure you have completed the following:

- Setup your ExaSAN storage completely. Please refer to the ExaSAN storages' user manual.
- Install the MDC and SANit, the SAN management software, please refer to the user's manual of SANit. If you want to install other SAN management software, please refer to its' user's manual or user's guide.
- Install the HBA card to your host server. Please refer to Section [3.1.1](#), "Installing HBA Card".
- Connect the QSFP cable between ExaSAN storages and SW16. Please refer to Section [3.1.2](#), "Connecting SW16 to the ExaSAN storages".
- Connect the QSFP cable between SW16 and the host server. Please refer to Section [3.1.3](#), "Connecting SW16 to the Host systems".
- Connect the switch LAN cable and power cord. Please refer to Section [3.1.4](#), "Connecting the switch LAN and power cord".

- Power on the ExaSAN storages, SW16 and the host server in the correct sequence. Please refer to Section [3.2.1](#), “Powering On”.

3.3.2 Installing the installer package

The installer package can be downloaded from the Accusys website. Go to the Accusys support page (<http://www.accusys.com.tw/support/download.html>) for available downloads. Or you can find it from the ExaSAN installation DVD. If you need more info or tech support, please contact your system integrator of ExaSAN product or Accusys FAE Dept. (see Appendix B “Customer Service and Technical Support” for more information)

3.3.2.1 Installing on MAC and Windows

1. Insert the installation DVD into the DVD drive of the MAC or PC.
 2. For Macs, unzip and execute “DVD-ROM/ExaSAN/For SAN/SW16/Installer package/Mac Installer/Accusys_IP_Mac_NT_x.x.x.zip”.
- For PCs, unzip and execute “DVD-ROM/ExaSAN/For SAN/SW16/Installer package/Windows Installer/Accusys_IP_Mac_NT_x.x.x.zip”.



Figure 25: Windows installer Package

Note

After you install the installer package completely, you'll see “RAIDGuard X” icon in the host. “RAIDGuard X” is a powerful tool which supports remote monitoring of multiple controllers that are connected to the same network. If you want to configure your storages in advance, you can use RAIDGuard X to do so. If you just need the basic function to setup your storages, you can use ExaSAN switch web GUI to do so. Please refer to the section “4. Using ExaSAN switch web GUI”. The detailed using information of RAIDGuard X, please refer to your storage's (A12S2-PS, B08S2-PS, etc...) user's manual.

3. Follow the onscreen instructions. Sample screens shown below are from a Windows installation.



Figure 26: GUI welcome page

4. Agree the License Agreement and click **NEXT**.

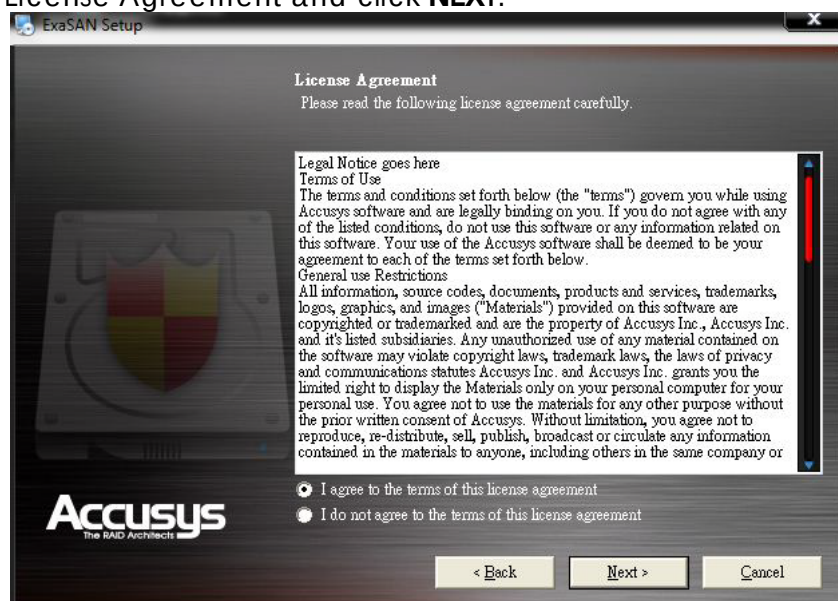


Figure 27: GUI license page

5. Select the path to install ExaSAN installer package and then click **NEXT**.



Figure 28: GUI destination select page

6. Click **NEXT** to continue with the Standard installation, which will automatically install the Driver and the RAIDGuard X Client.



Figure 29: GUI installation type page

7. Click **Finish** to complete the installation.



Figure 30: GUI installation successful page

Note

Storport and miniport are new storage drivers created by Microsoft for Windows Server 2003 and future Windows operating systems.

3.3.2.2 Installing on Linux**Driver Installation**

1. Copy the ExaSAN driver files onto your GUI desktop. Open a terminal window.
2. Type the following commands:

```
# cd 'root/Desktop/Accusys_LinuxRaid'
```

```
# make
```

Example:

```
[root@localhost Accusys_LinuxRaid]# make
make -C /lib/modules/2.6.18-238.el5/build M=/root/Desktop/Accusys_LinuxRaid
make[1]: Entering directory `/usr/src/kernels/2.6.18-238.el5-i686'
LD      /root/Desktop/Accusys_LinuxRaid/built-in.o
CC [M]  /root/Desktop/Accusys_LinuxRaid/acs_ame.o
In file included from /root/Desktop/Accusys_LinuxRaid/AME_module.c:11,
                 from /root/Desktop/Accusys_LinuxRaid/acs_ame.c:38:
/root/Desktop/Accusys_LinuxRaid/AME_module.h:188:28: warning: "/" within commen
t
In file included from /root/Desktop/Accusys_LinuxRaid/AME_module.c:11,
                 from /root/Desktop/Accusys_LinuxRaid/acs_ame.c:38:
/root/Desktop/Accusys_LinuxRaid/AME_module.h:223: warning: 'packed' attribute ig
nored
/root/Desktop/Accusys_LinuxRaid/AME_module.h:231: warning: 'packed' attribute ig
```

The Linux compiler should now begin compiling the driver.

ls

Example:

```
[root@localhost Accusys_LinuxRaid]# ls
acs_ame.c      acs_ame.mod.o  AME_module.h  Makefile.kernel2.4_x86_64
acs_ame.h      acs_ame.o      built-in.o     Module.markers
acs_ame.ko     ame.h          Makefile       Module.symvers
acs_ame.mod.c  AME_module.c  Makefile.kernel2.4
```

Verify that acs_nt.ko has been compiled. If so, please type the following command

insmod acs_nt.ko

lsmod

Example:

```
root@localhost Accusys_LinuxRaid]# lsmod
Module                Size  Used by
acs_nt                 21376  0
i915                   24257  1
drm                    65365  2 i915
autofs4                29253  3
hidp                   23105  2
rfcomm                 42585  0
l2cap                  29633  10 hidp, rfcomm
bluetooth              53797  5 hidp, rfcomm, l2cap
lockd                  63337  0
sunrpc                 146685  2 lockd
cpufreq_ondemand       12493  4
acpi_cpufreq           13641  0
mperf                  6337  1 acpi_cpufreq
be2iscsi               59893  0
ib_iser                35609  0
rdma_cm                35705  1 ib_iser
ib_cm                  39213  1 rdma_cm
```

The driver should be now loaded in Linux.

3.3.3 Confirm the ExaSAN RAID system driver on OS

3.3.3.1 Confirming the ExaSAN RAID system driver on Mac

After installing the ExaSAN RAID system HBA driver on the Mac host server, confirm the driver has been properly installed with the following steps.

1. Click on **About This Mac**.



Figure 31: to click about This MAC

2. Click on the **More Info...** button.



Figure 32: About This MAC

3. Click on the **System Report...** button.



Figure 33: more info About this MAC

Under the **Hardware** category, click on **PCI Cards** to bring up information on PCI cards that are installed in the system. If the driver has been correctly installed, the HBA is listed with the **Accusysntdevice.kext** identifier (actual name may vary) as a **RAID Controller**. If you do not see the HBA listed here, power off the host server, reseal the card, and reinstall the driver. Refer to Appendix A FAQ Q7 if the problem persists.

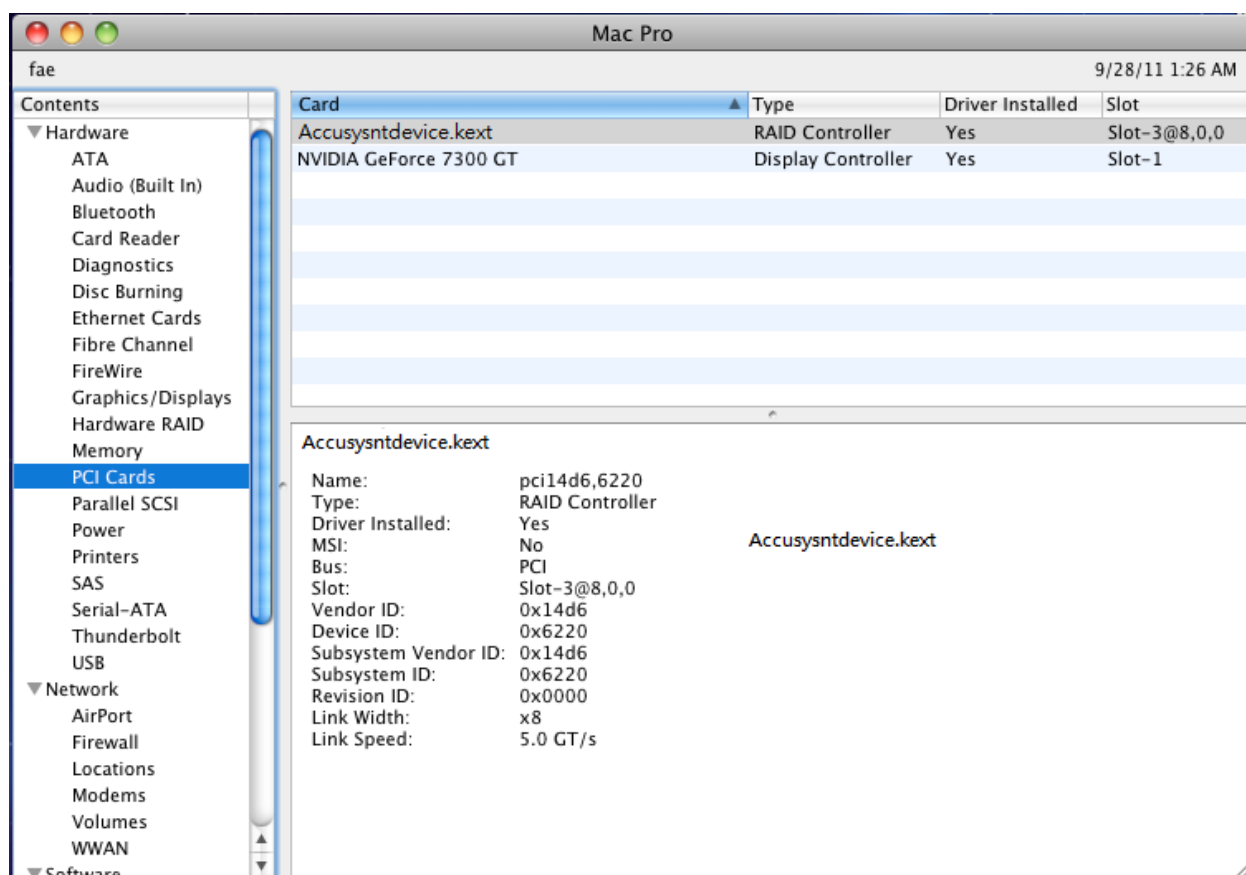


Figure 34: MAC Pro info

3.3.3.2 Confirming the ExaSAN RAID system driver in Windows

After installing the ExaSAN RAID system HBA driver on a Windows based host server, confirm the driver has been properly installed.

Go to **Control Panel -> System Properties -> Hardware -> Device Manager** (depending on the version of Windows, the path may vary). If the driver has been correctly installed, the HBA is listed with the **ACS-6xxxx** identifier (actual name may vary) as **Storage Controllers**.

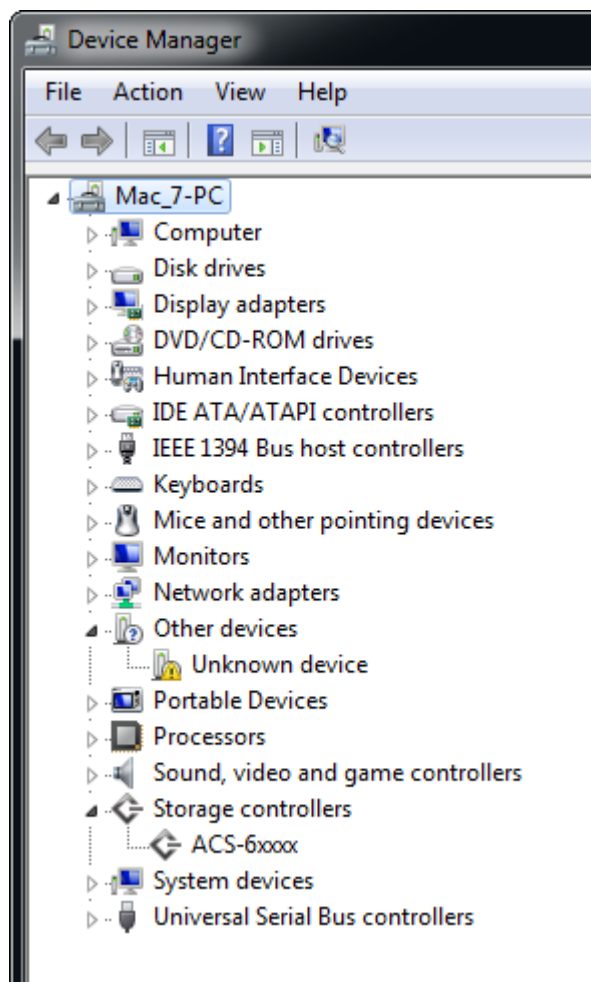


Figure 35: device manager in Windows platform

Caution

If you see the HBA listed as an unknown device under Windows, follow the driver installation steps to reinstall the driver. If you do not see the HBA under Device Manager, Windows does not detect the card. Power off the host server to reseal the HBA.

3.3.4 Confirm LEDs on HBA

Verify the Jumper Switch LED, Link LED, and Access LED on the backplane of the HBA are appropriately lit according to your installation (Refer to Section 1.5.2 ExaSAN QSFP Host Bus Adapter). If the LEDs are not on, please refer to the Appendix A FAQ Q3.

Note

For more detailed using info about RAIDGuard X, please refer to the storage's user manual.

4. Using ExaSAN switch web GUI

4. Using Switch Web GUI

After you have connected all your ExaSAN components, powered the system on, and used a web browser in a computer, which is in the same network, we will first need to perform some basic configuration and setup before the ExaSAN SAN environment is fully operational.

Note

The default IP of eth0 is 192.168.0.25 and eth1 is 192.168.1.25.

4.1 ExaSAN switch web GUI

4.1.1 Entering ExaSAN switch web GUI

After you type the IP address “192.168.0.25” on your web browser to enter the main page of the web GUI as following screen shot, it might ask you to install the JAVA script. Please follow the steps shown on the screen to complete the installation. Then you can see the following screen shot.



Figure 36: login screen of web GUI

4.1.2 User name and Password

The default user name and password is “admin” and “00000000” (8 zeros). Please type the user name and password to enter the configuration menu of the web GUI as the following figure.

Note

User cannot change the default user name but password. If you forget

your changed password, you could push the reset button in back of the SW16 for 13 seconds to go back the default setting. Please refer to the section 1.4.1.4 for more detailed info.

Caution:

If you push reset hold but not disconnected the all clients, you might damage your important data in the SAN environment.

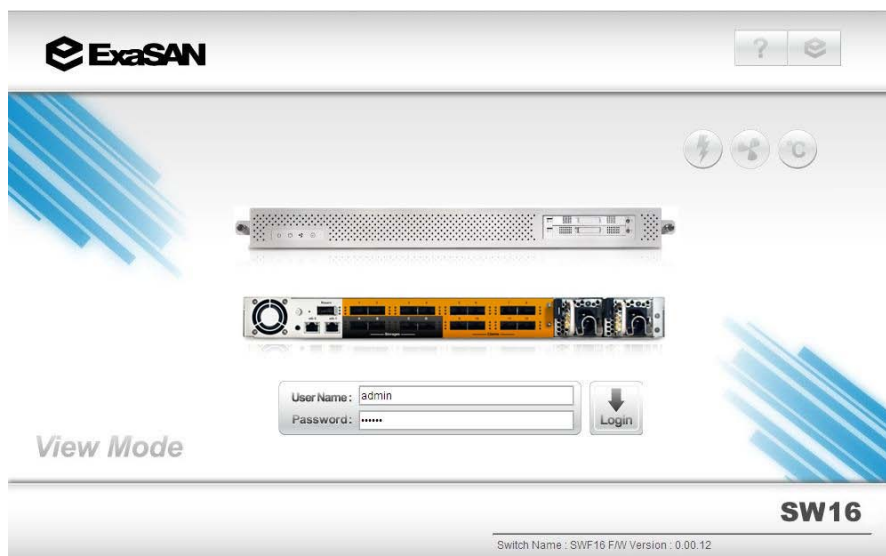


Figure 37: Enter user name and password

4.1.3 Configuration menu - Overview

The following Figure is shown the three main functions,

- Quick Setup
- Event Management
- System management

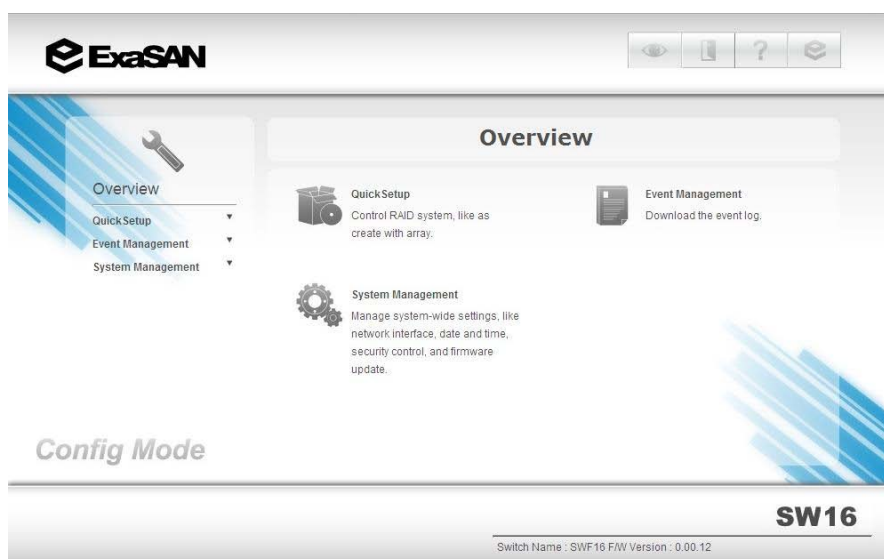


Figure 38: Overview menu of ExaSAN switch web GUI

4.2 Creating arrays by SW16 – “Quick Setup”

If you haven't created arrays in your ExaSAN storages that have been connected with SW16, you could create arrays in the ExaSAN storages by “Quick Setup” function as following screen.

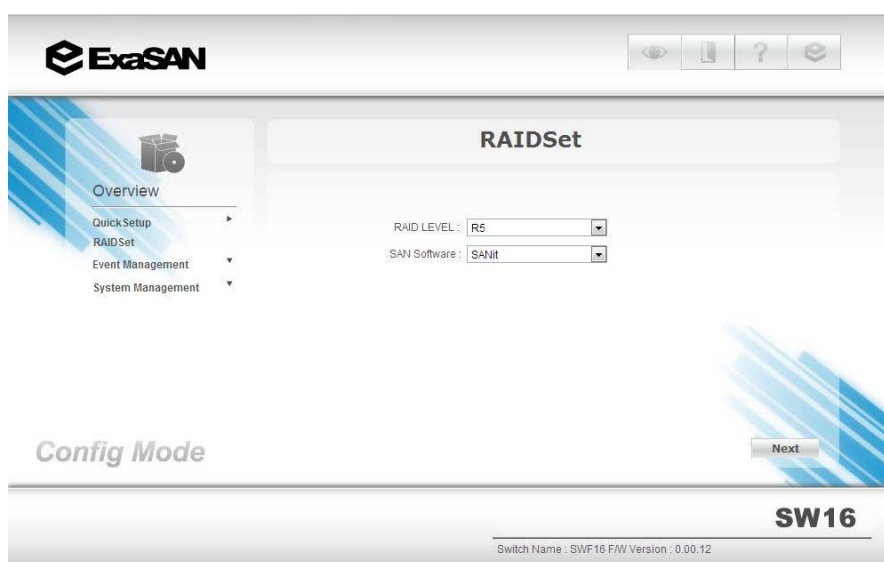


Figure 39: Quick setup menu of ExaSAN switch web GUI

Note

The “Quick Setup” function just creates arrays for ExaSAN RAID systems but not JBOD systems.

The concept of creating arrays by “Quick Setup” function is

Step 1: Choosing RAID level. You can choose R5 or R6 in the menu.

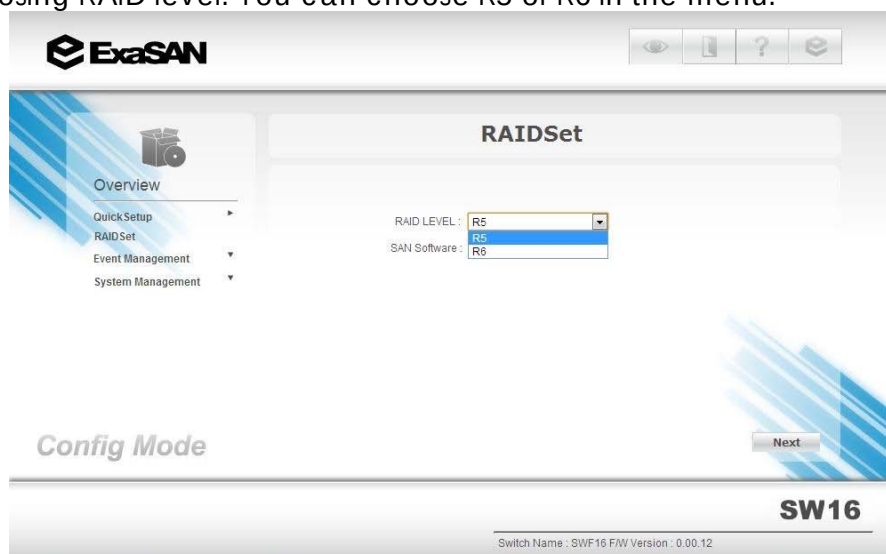


Figure 40: Choosing RAID Level – R5

Step 2: Choosing SAN Software. This option means what SAN software you want to use. Currently, SW16 only supports “SANit” so you needn’t click the option.

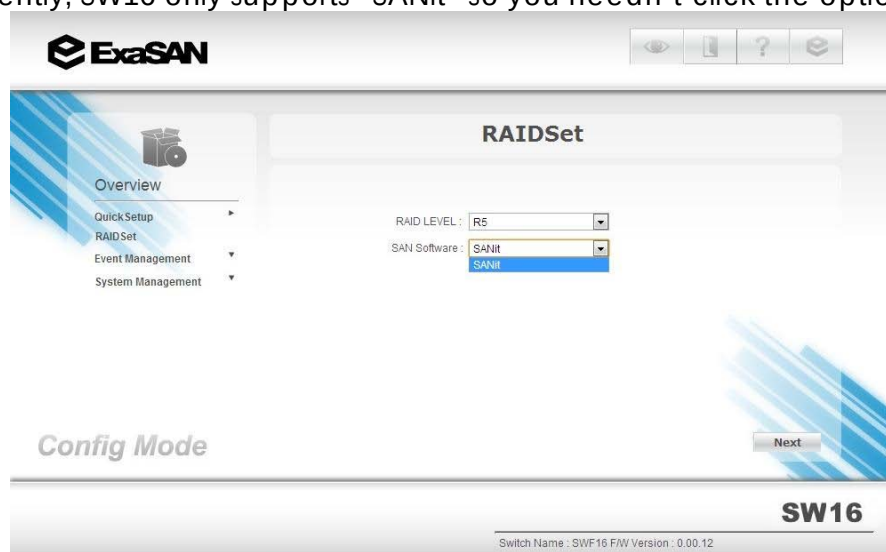


Figure 41: Choosing SAN software – SANit

Step 3: Click “Next” button in the bottom right to process. Then you might see the two kinds of screens as following. The “figure 45” indicates SW16 had been connected 4 pieces of ExaSAN storages “A12S2-PS”. The “figure 46” means the SW16 doesn’t detect any connected ExaSAN storage.

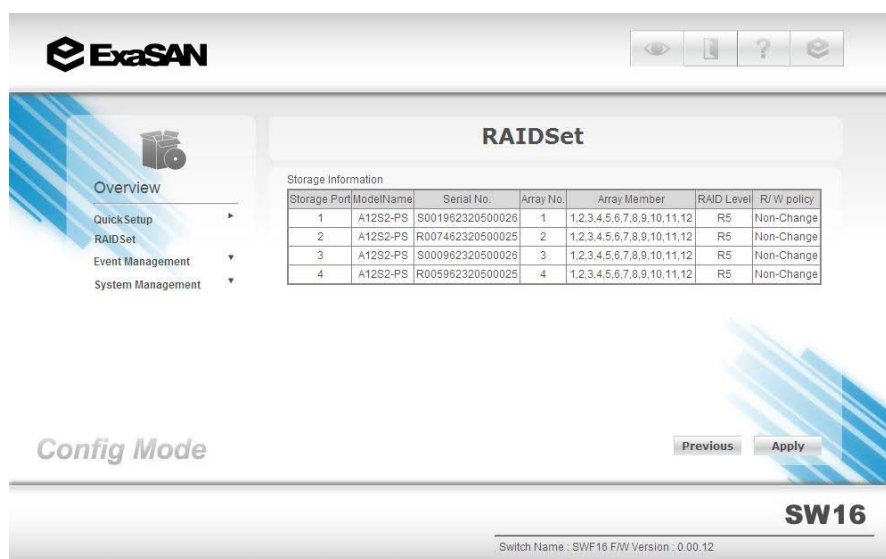


Figure 42: RAIDSet (find ExaSAN storages)

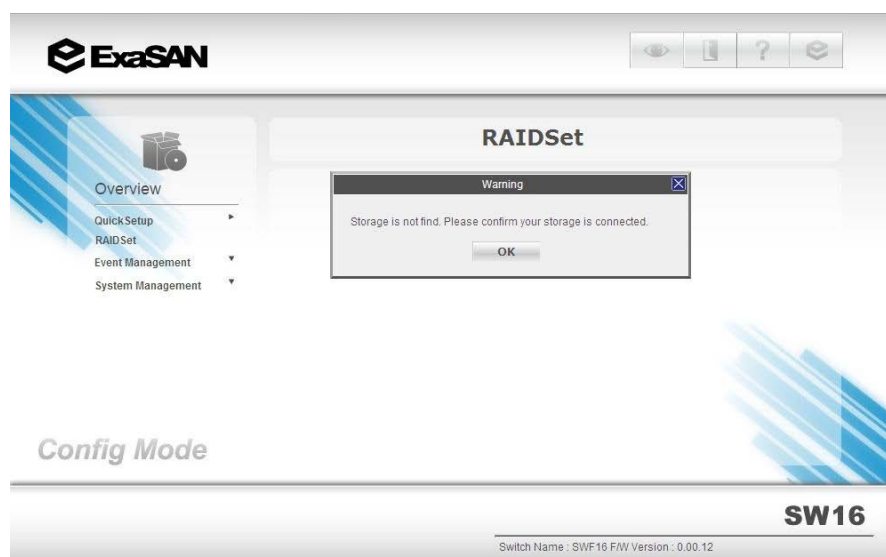


Figure 43: RAIDSet (find ExaSAN storages)

Step4: If the table content about the “Storage Information” is correct, please click “Apply” button to start arrays creating. Then you’ll see the screen as following,

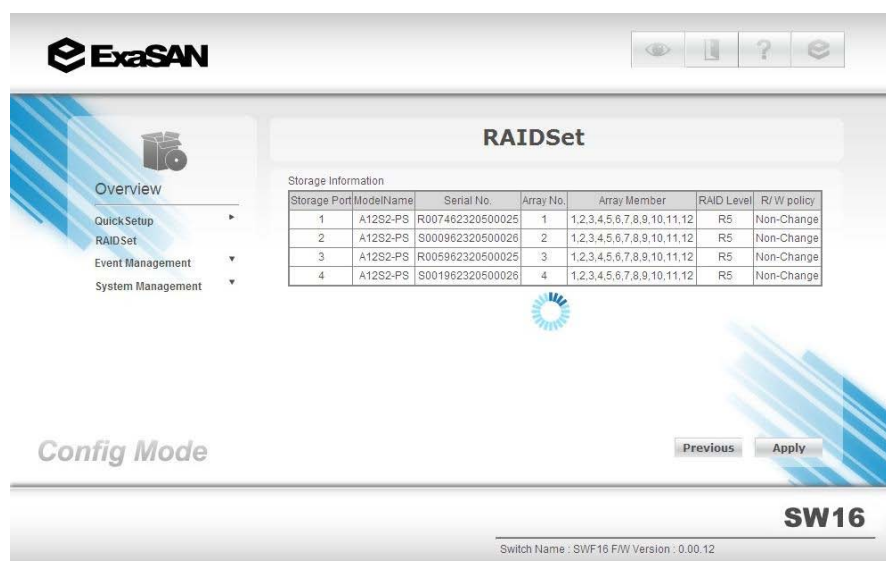


Figure 44: Arrays creating

Note

If you connected the ExaSAN storages, which had been created arrays in them, the “Apply” button would **NOT** been shown on the bottom right.

Note

We strongly recommend you creating 2, 4 or 8 arrays to build up your SAN volume because of the performance issue.

4.3 Log download – “Event Management”

Log is the very important clue to analyze root caused when user meet some problem around the SAN environment. SW16 web GUI provides the function to download the log of the SW16.

Step 1: To click “Event Management”, then you’ll find “Download” button in the middle of the GUI.

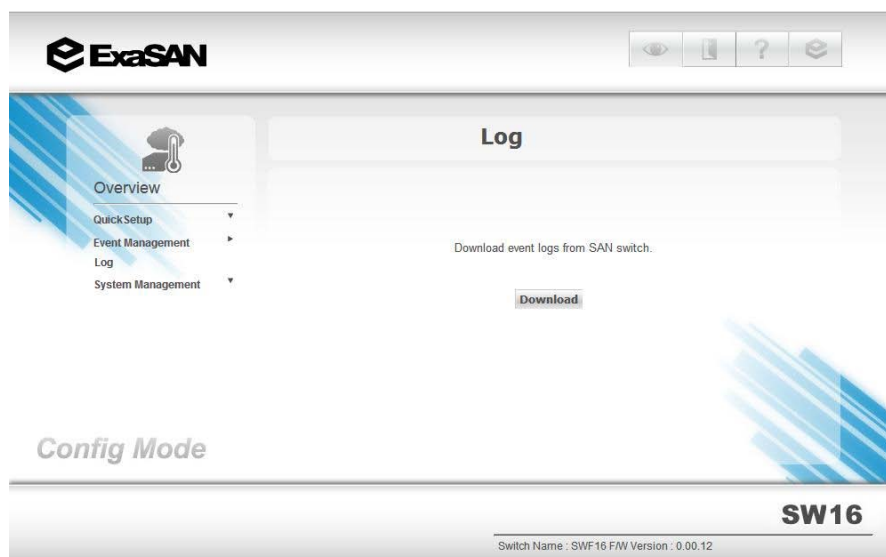


Figure 45: To find “Download” button

Step 2: Clicking “Download” button to process, then you’ll see a processing bar as following figure

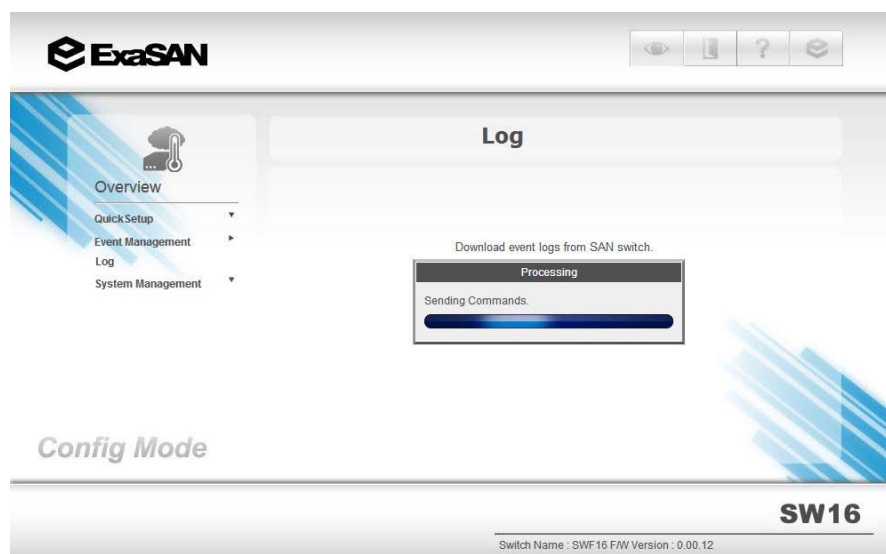


Figure 46: processing bar

Step 3: After the processing finished, you can see the log hyper-link in the middle as the following figure.

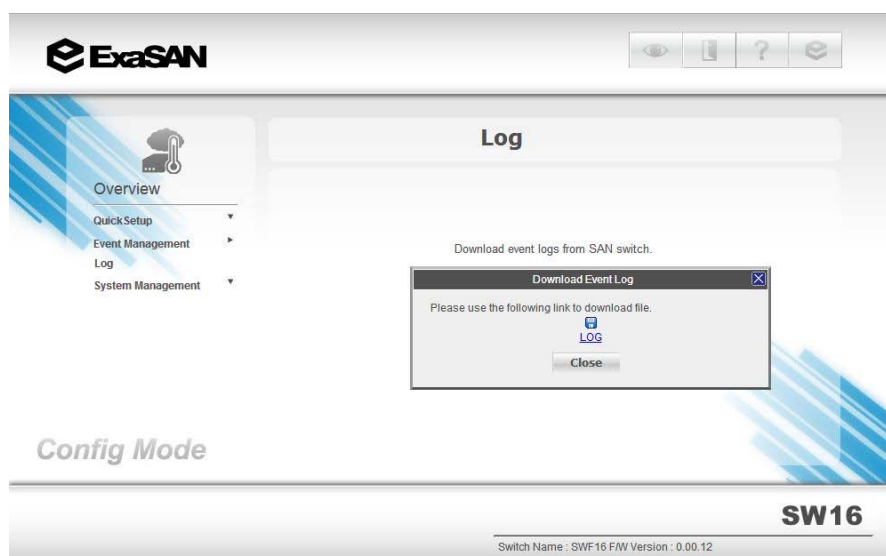


Figure 47: the LOG hyper-link

Step 4: Clicking “[LOG](#)” to download log file in your computer. For example: Google Chrome web browser. The default file name of the log is “diag.bin”.

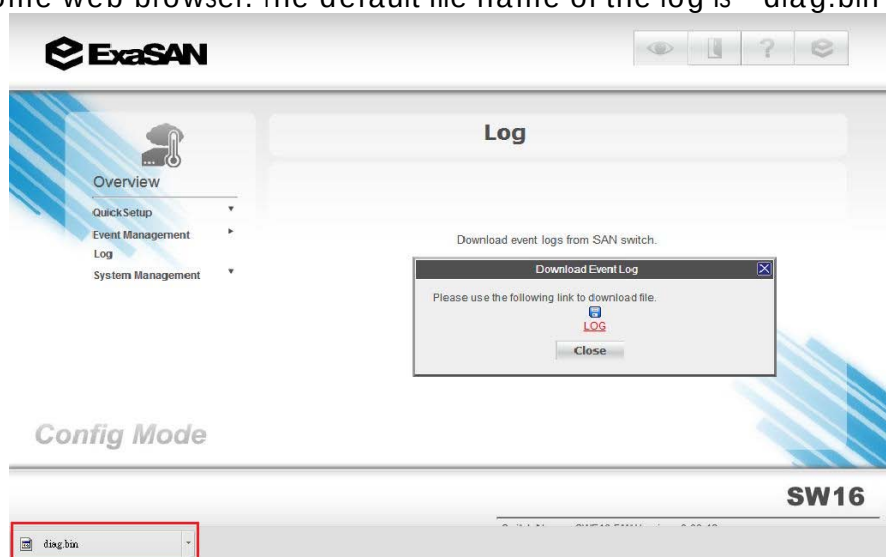


Figure 48: download log file “diag.bin” in Google Chrome

4.4 System Management

There are several functions in “System Management”. It includes

- Network
- Time
- Security Control
- Firmware Update
- Restart/Halt

4.4.1 Configuring the network – “Network”

Users can use “NIC” option to choose “eth0” or “eth1” and then setup the parameters. We strongly recommend using eth0 as public network for communicating with other computer, which is not in the ExaSAN SAN environment and eth1 as private network for ExaSAN SAN environment.

4.4.1.1 eth0 – SAN management port (RJ45)

Users can find the following info or setup the parameters in the page

- Disable “eth1”: Checking the box in front of “Disable eth1” to disable eth1 port.
- MAC address: User can find the MAC address of eth0 in the page
- Assignment method: To setup or change the IP of eth0. The default IP address is “192.168.0.25”.
 - IP address
 - Network Mask
 - Gateway
 - DNS server

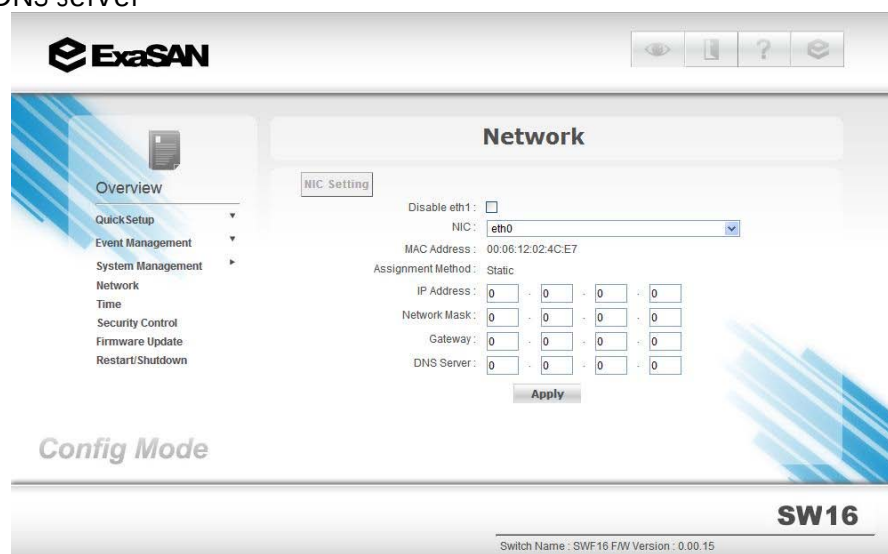


Figure 49: “eth0” setting

4.4.1.2 eth1 – SAN private port (RJ45)

Users can find the following info or setup the parameters in the page

- Disable “eth1”: Checking the box in front of “Disable eth1” to disable eth1 port.
- MAC address: User can find the MAC address of eth1 in the page
- Assignment method: To setup or change the IP of eth0. The default IP address is “192.168.1.25”.
 - IP address
 - Network Mask

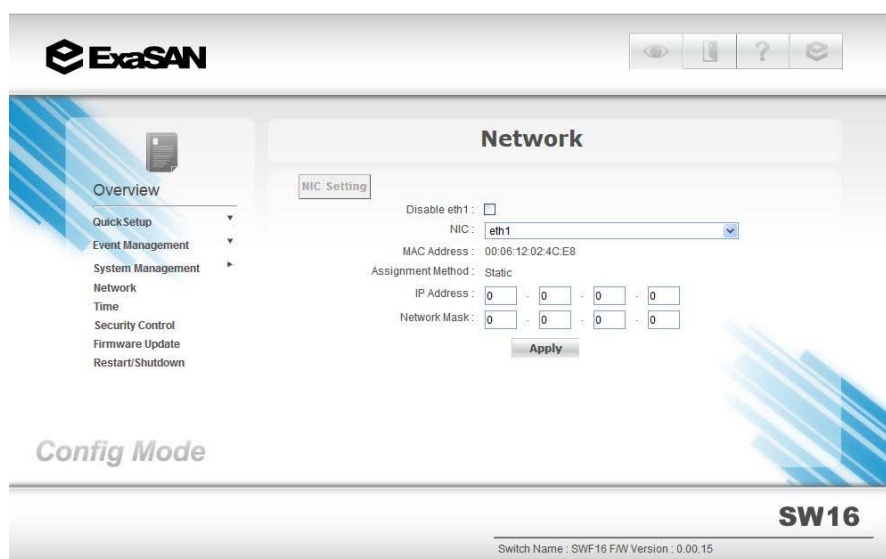


Figure 50: “eth1” setting

4.4.2 Changing SW16 time – “Time”

ExaSAN switch web GUI support 2 types of time setting.

- Static
- NTP

Time setting would affect the time that record in event log of the SW16.

4.4.2.1 Static

Selecting the correct time and date. Then click “Apply”

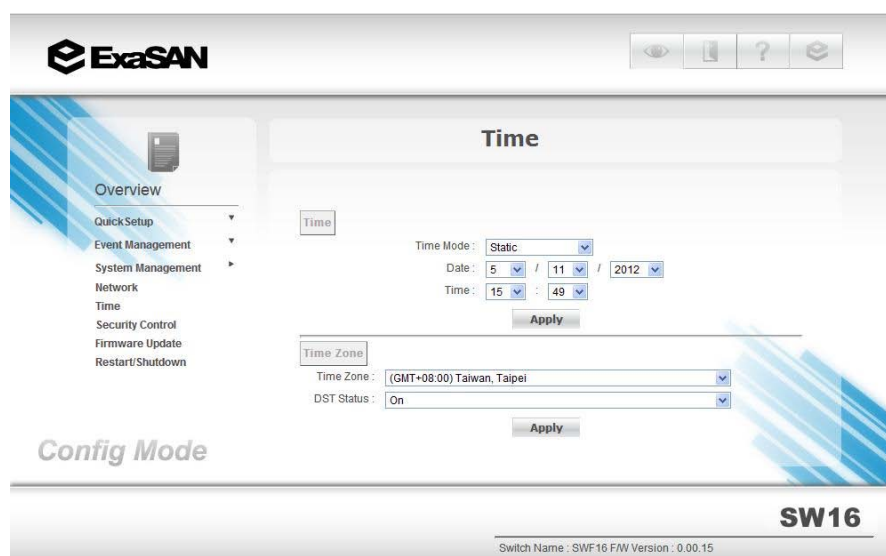


Figure 51: “Time” - Static

4.4.2.2 NTP

When you select NTP, you need to setup a NTP server for the function. If the NTP server that you type in doesn't exist or not been detected, SW16 would use static time setting.

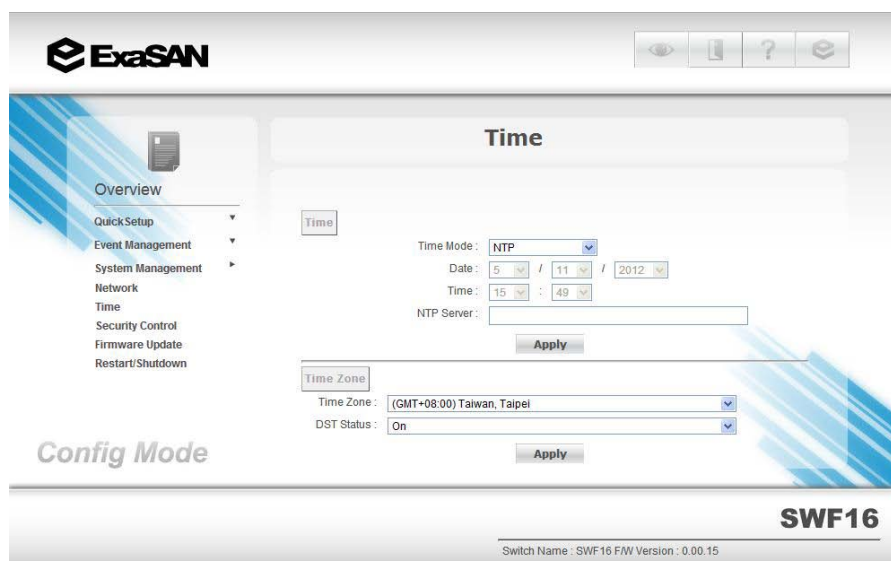


Figure 52: "Time" - NTP

You can enter any intranet or internet NTP server. And then click "Apply" to process. For example: NTP server – clock.stdtime.gov.tw

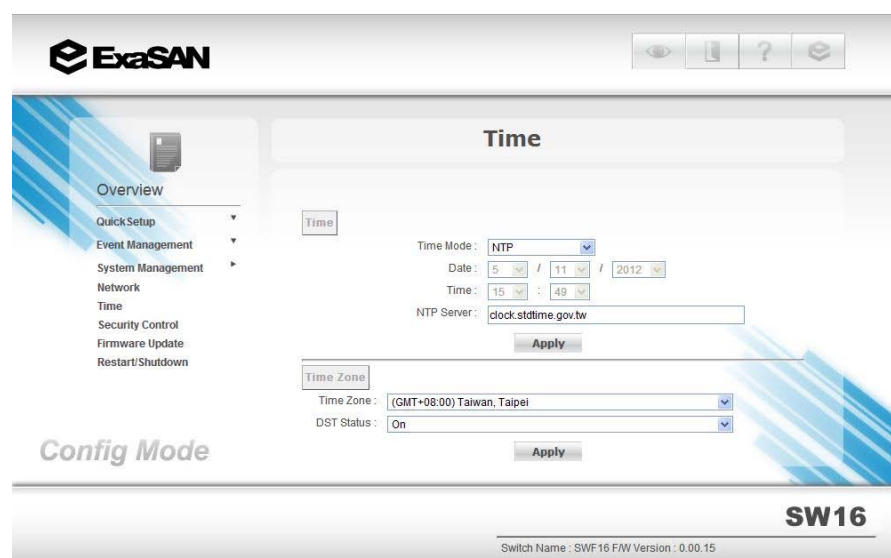


Figure 53: "Time" – setup NTP server

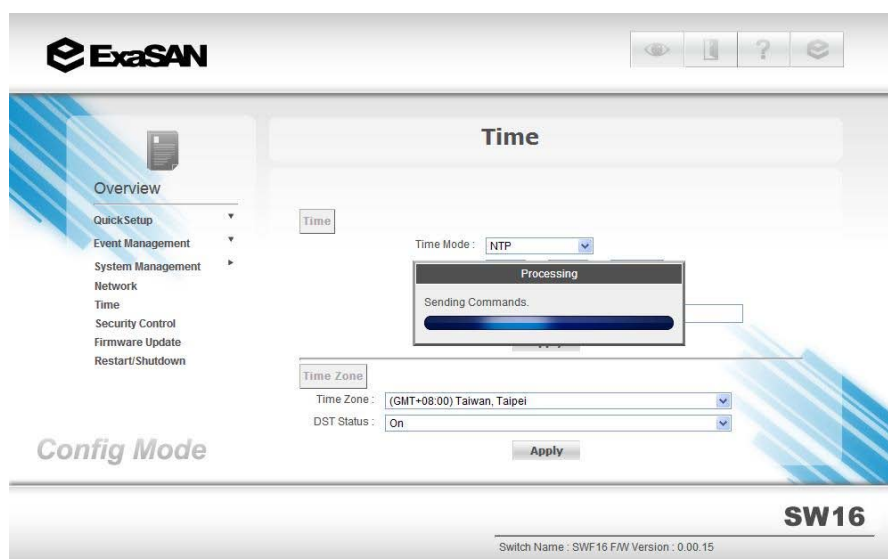


Figure 54: “Time” – processing the configuration of NTP

4.4.3 Change Password – “Security Control”

The only function in “Security Control” is to change login password for entering SW16 web GUI. When you click “Security Control”, you’ll find the following figure

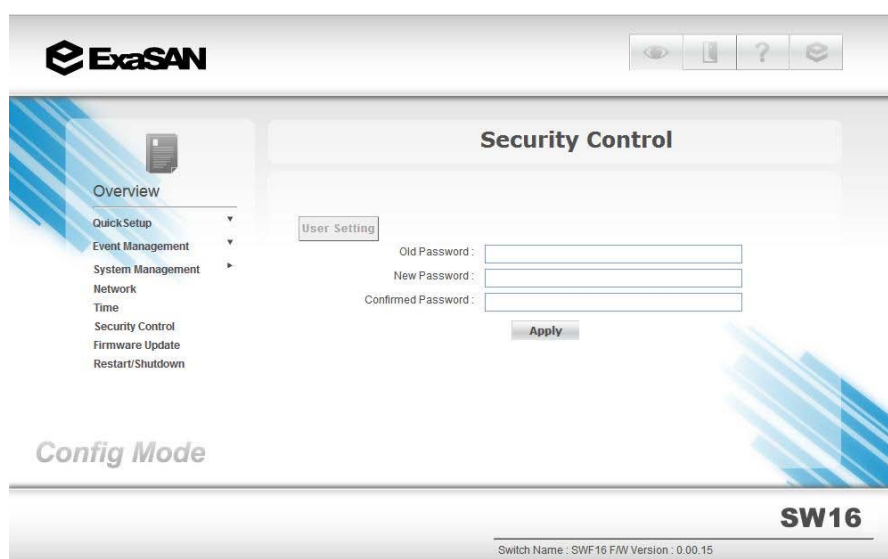


Figure 55: “Security Control”

Four steps to change the password

- Enter old password
- Enter new password
- Re-enter new password
- Click “Apply”

If users enter wrong old password, they’ll see



Figure 56: old password not match

If users enter different new password, they'll see



Figure 57: new password not the same

Press "OK" and go over step1 to step4 to change password.

4.4.4 Firmware Update

For some reason, users might need to update the firmware of their SW16. "Firmware Update" is the function to reach the purpose.

Note

Before you start to update the firmware of SW16, please power of all of the clients or host that connected to the SW16.

There are four steps to update the firmware of SW16. They are,

- i. To click "**Choose File**"

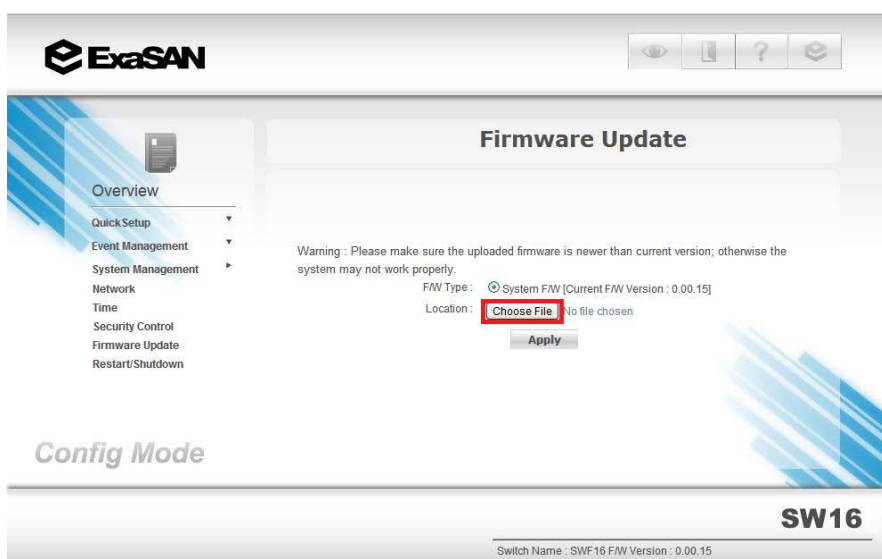


Figure 58: Firmware Update

- ii. Selecting firmware file. The firmware file is a "gz" file, not txt or others.

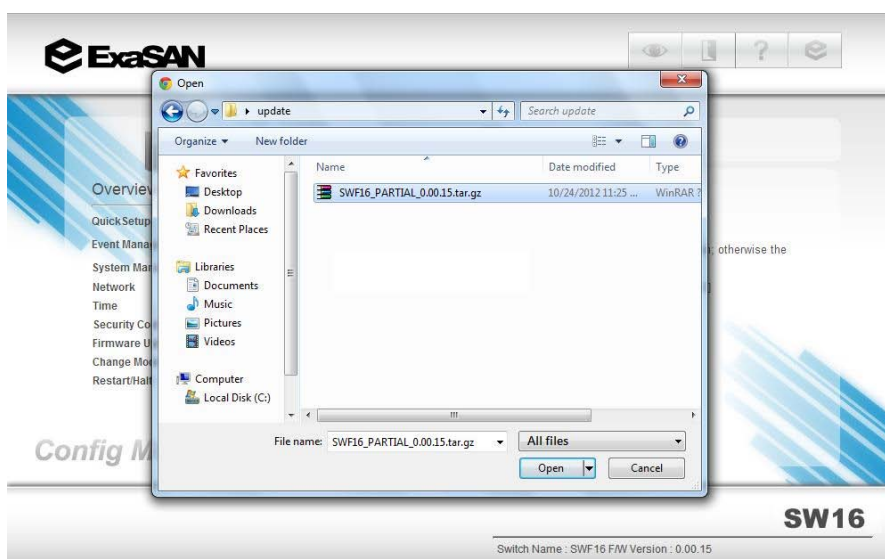


Figure 59: Selecting F/W file location in Windows platform

- iii. Click “Apply” to continue the processing

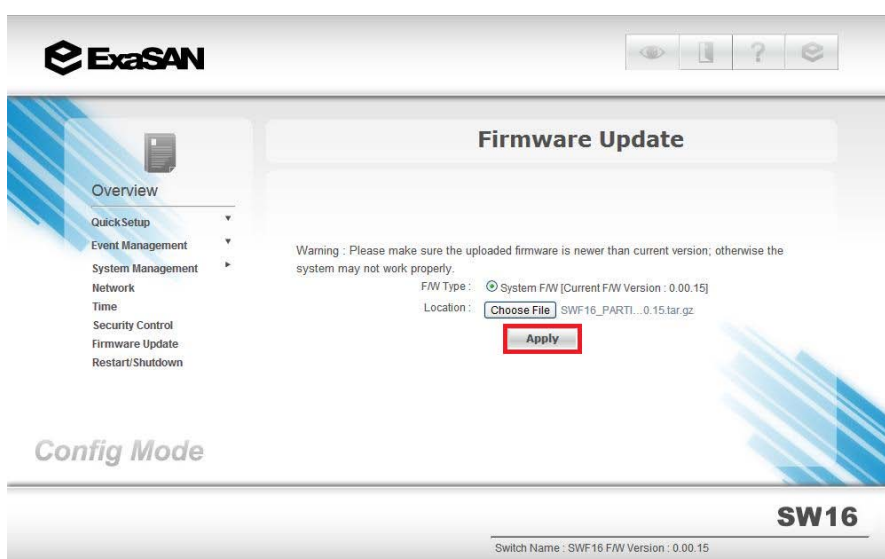


Figure 60: Clicking “Apply”

- iv. Then the GUI would pop up a window to ask your confirmation. If you ensure to update the firmware of the SW16, please click “Confirm”



Figure 61: Clicking “Confirm” to update the firmware

- v. After users click “Confirm”, it would pop up a window to show the updating percentage of the SW16.

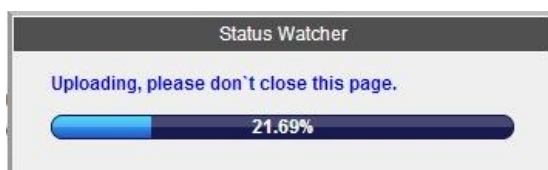


Figure 62: Update F/W status window

Note

Depends on the changing parts of SW16, the time would take about 5 (portion updated) to 30 (completed updated) minutes for updating the firmware of SW16. Please check the processing bar to ensure the SW16 works fine in the period.

vi. Update firmware successfully



Figure 63: Update F/W successfully

4.4.5 Restart / Shutdown

Use this function to restart the SW16.

- Selecting “Restart”

Note

Please ensure “All Clients, which connected to the SW16” are power off before you restart the SW16.

- Clicking “Apply”

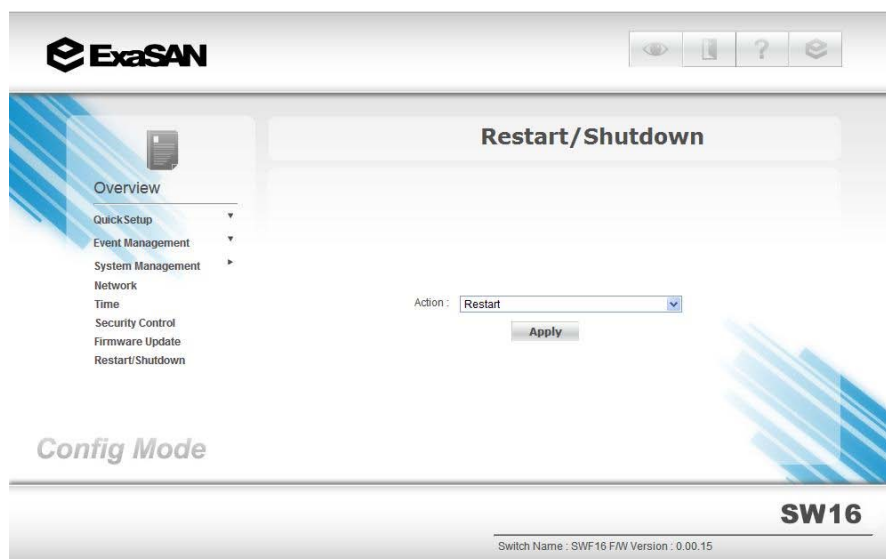


Figure 64: Restart

Use this function to shutdown the SW16.

- Selecting “Shutdown”

Note

Please ensure “All Clients, which connected to the SW16” are power off before you halt the SW16.

- Clicking “Apply”

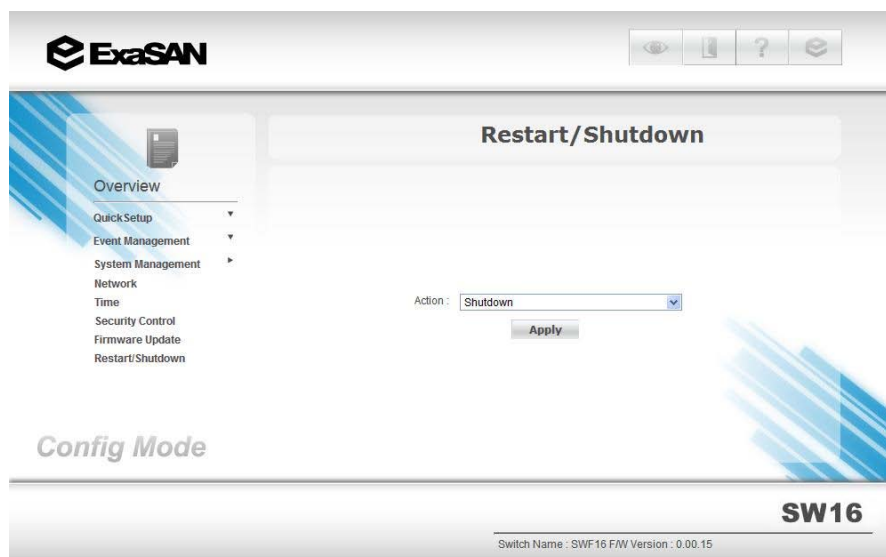


Figure 65: Shutdown

4.5 Environment status monitoring

After users finish the setting of the SW16, they can click “①” to go to “View Mode” to check more environment information of the SW16. The following figure is shown other helpful functions but not explained in chapter 4.1 to 4.4.



Figure 66: Config Mode

	Function	Description
1	Go to View Mode	Clicking the icon go to “View Mode” to check more environment information
2	Logout Config Mode	Clicking the icon to logout “Config Mode”
3	Help	Users can find out some information about using SW16
4	About the switch	About the switch
5	Config Mode	The web GUI is in the configuration mode
6	FW version	Users can see the firmware version of the SW16
7	SW16	The ExaSAN switch’s model name

When users click “①” in previous figure to go to “View Mode”, the web GUI is shown as following figure

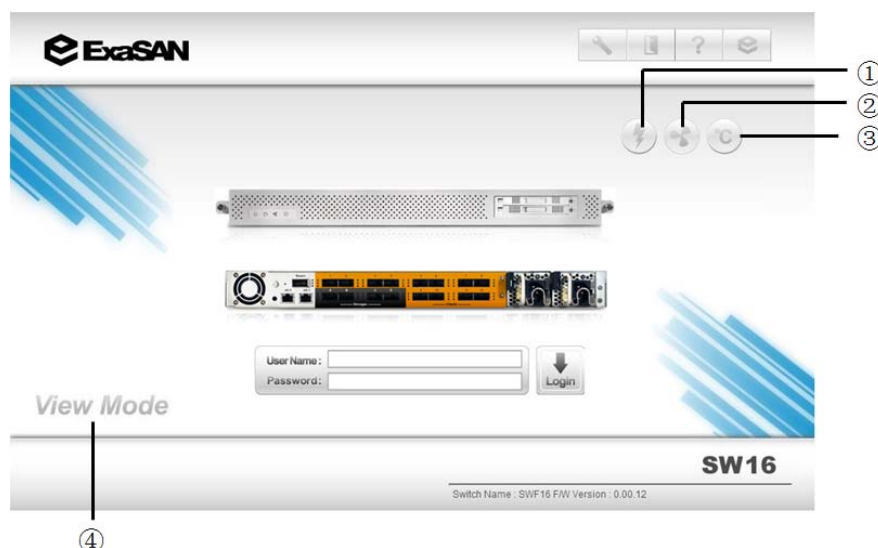


Figure 67: View Mode

	Function	Description
1	Voltage	Clicking the icon to check the voltage status of the SW16
2	FAN	Clicking the icon to check the FAN speed and status of the SW16
3	Temperature	Clicking the icon to check the current temperature of the SW16
4	View Mode	The web GUI is in "View Mode"

User can check the following environment information

- Voltage
- FAN
- Temperature

When users click "Voltage" icon, the web GUI would pop up a window as following

Detailed Information of Volt			
Environment Volt Information			
Sensor	Current	Warning	Error
3.3V	3.34V, Normal	3.135V 3.465V	2.97V 3.63V
5V	5.07V, Normal	4.75V 5.25V	4.5V 5.5V
12V	12.17V, Normal	11.4V 12.6V	10.8V 13.2V

Figure 68: Voltage status

When users click "FAN" icon, the web GUI would pop up a window as following

Detailed Information of Fan		
Fan Information		
Sensor	Fan Speed	Fan Status
FAN	8083	Normal

Figure 69: FAN speed and status

When users click “Temperature” icon, the web GUI would pop up a window as following

Detailed Information of Temperature			
Environment Temperature Information			
Sensor	Current	Warning	Error
CPU	52°C, Normal	90°C	100°C
Switch Board	47°C, Normal	65°C	75°C

Figure 70: Temperature

4.6 SAN management software configuration - SANit FS

If you choose SANit FS to be your SAN management software, please follow the steps below to configure your SAN environment. For more detailed info like setting up a MDC, please refer to the user’s manual of SANit.

After you type the IP address in your web browser to go to the SANit configuration menu in the MDC, you should see the screen shot as figure 71. Please select Language first, and then enter User Name (Default user name is admin) and Password (Default password is 00000000, “eight zeros”), and then click Log In. See below.

Note

User cannot change the default user name but password. If you forget your changed password, you could push the reset button in back of the SW16 for 13 seconds to go back the default setting. Please refer to the section 1.4.1.4 for more detailed info.

Caution:

If you push reset hold but not disconnected the all clients, you might damage your important data in the SAN environment.

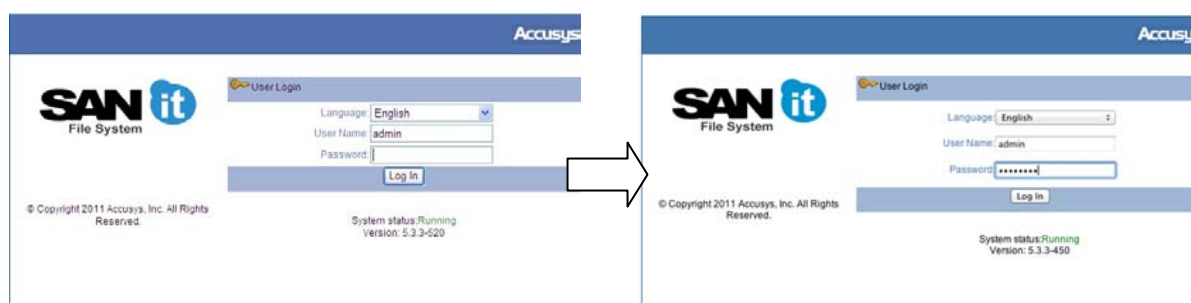


Figure 71: login SANit FS

Active SANit

Step 1: Import license. See section 4.6.1

Step 2: SAN Volume Create (Quick Wizard). See section 4.6.2

Step 3: Add SAN Client IP in SANit (SW16 side). See section 4.6.4

Step 4: Add Clients (Client side Install & Set up). See section 4.6.5

4.6.1 Import License

After installing SANit software, you will then need to activate the software. To activate SANit software, you must decide if you want a trial version or an official version and you need to obtain a Signature File. Please follow the steps below:

Note

The default package of SW16 includes 6 SANit client licenses. If users need to active more than 6 licenses, please refer to the section 4.6.1.2.

4.6.1.1 Trial Version of SANit

The screenshot shows the 'License' management page in the SANit software. At the top, it says 'License'. Below that, a message reads: 'No license in MDC. If you want to update the license, 1. Click "Get signature". 2. Send signature file to Accusys. 3. Active license by "Import" button from Accusys.' A red error bar with a crossed circle icon displays the message: '12010: No license found. [Show details]'. Below this, a table lists license details, all of which are 'N/A':

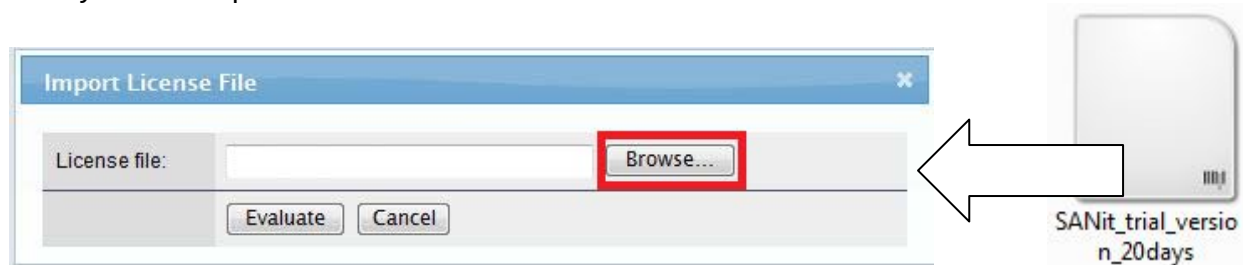
License type:	N/A
Maximum number of all platform clients:	N/A
Maximum capacity of file systems:	N/A
High-Availability:	N/A
MDC number of providing services:	N/A

At the bottom of the table are two buttons: 'Get signature' and 'Import'.

Step 1: Click "License" and then "Import."

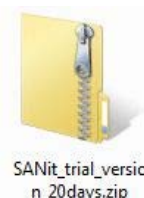
This screenshot shows the full Accusys SAN File System web interface. On the left is a navigation menu with sections for 'CONFIGURATION' (Network Management, Administrator Password, Date and Time, License, Quick Wizard, Client Management, Client Software and Document Downloadation) and 'MAINTENANCE' (System Status, System Logs, Configuration File Management). The 'License' option under CONFIGURATION is selected. The main content area is the same 'License' management page as in the previous screenshot, showing the '12010: No license found' error and the 'Import' button, which is now highlighted with a red rectangle.

Step 2: Enter import file name, and then click “**Browse**” to obtain the trial version license from your SANit provider.

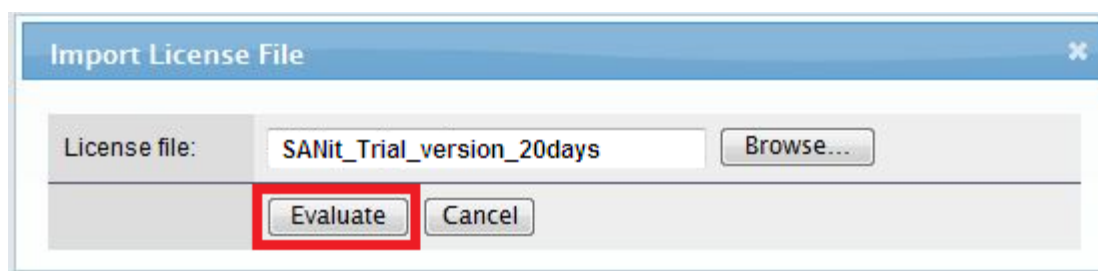


Note:

You should receive the license file as a zip file. Before you browse to obtain the license, please unzip the file that you receive from your SANit provider first.



Step 3: Click “**Evaluate**.” See example below:



Step 4: Click “**Import**”.

License file:	SANit_Trial_version_20days	Browse...
License type:	Trial Version	
Trial license days left:	20 day(s)	
Maximum number of all platform clients:	12	
Maximum capacity of file systems:	Unlimited	
High-Availability:	Enabled	
MDC pattern of providing services:	Active-Passive	
	Import	Cancel

Step 5: See the information shown below:

License	
The current license is Trial Version . If you want to update the license, 1. Click "Get signature". 2. Send signature file to Accusys. 3. Active license by "Import" button from Accusys.	
License type:	Trial Version
Trial license days left:	20 day(s)
Maximum number of all platform clients:	12
Maximum capacity of file systems:	Unlimited
High-Availability:	Enabled
MDC pattern of providing services:	Active-Passive
Get signature Import	

4.6.1.2 Get Official License for more clients

When you received the SW16 from your vendor, it should include the official license for 6 clients. If you need to extent more clients supported, please provide the serial number of the SW16 to your vendor. We will come out a official license to fit the serial number of the SW16. If you cannot find out the serial number of the SW16, please refer to the following steps to upgrade more clients supported feature.

- “Get signature file” or “write down the serial number of the SW16”
- “Return the signature file or serial number to your vendor”,
- “Received official license from your vendor”,
- “Import the license to the SW16.
- “Restart the SW16 and active it”

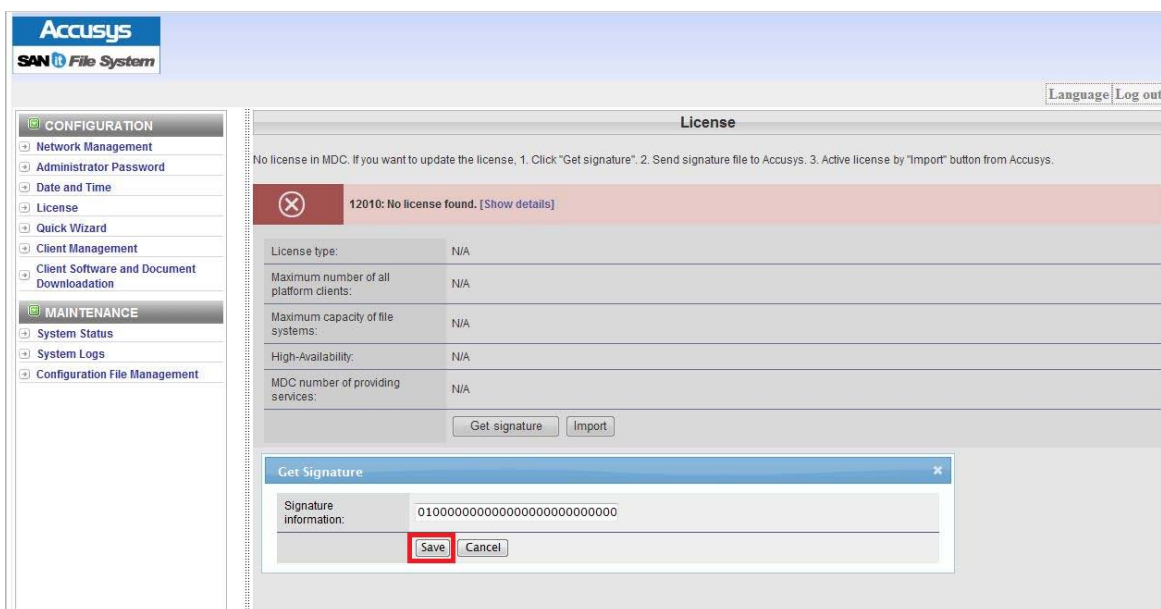
If the trial version was a success, you can obtain an official licensed version of SANit. The first step is to obtain a Signature File. Steps 1 through 5 will show you how to obtain a Signature File. See the steps below:

Step 1: Select “License.”

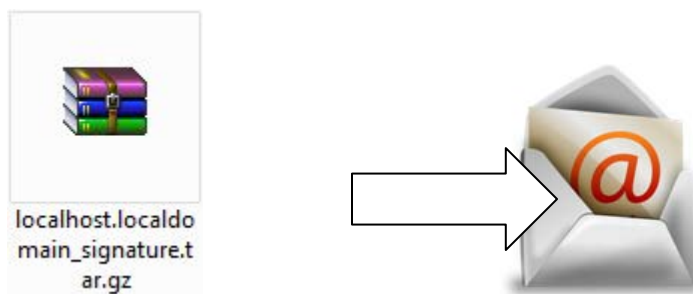
The screenshot shows the Accusys SANit File System web interface. On the left is a navigation menu with sections for CONFIGURATION and MAINTENANCE. The 'License' option under CONFIGURATION is selected. The main content area displays the 'License' configuration page, which includes a table with license details and two buttons at the bottom: 'Get signature' and 'Import'. The 'Get signature' button is highlighted with a red rectangular box.

License	
The current license is Trial Version . If you want to update the license, 1. Click "Get signature". 2. Send signature file to Accusys. 3. Active license by "Import" button from Accusys.	
License type:	Trial Version
Trial license days left:	20 day(s)
Maximum number of all platform clients:	8
Maximum capacity of file systems:	Unlimited
High-Availability:	Enabled
MDC pattern of providing services:	Active-Passive
Get signature Import	

Step 2: Click “Get signature” and then save Signature File in your desktop.



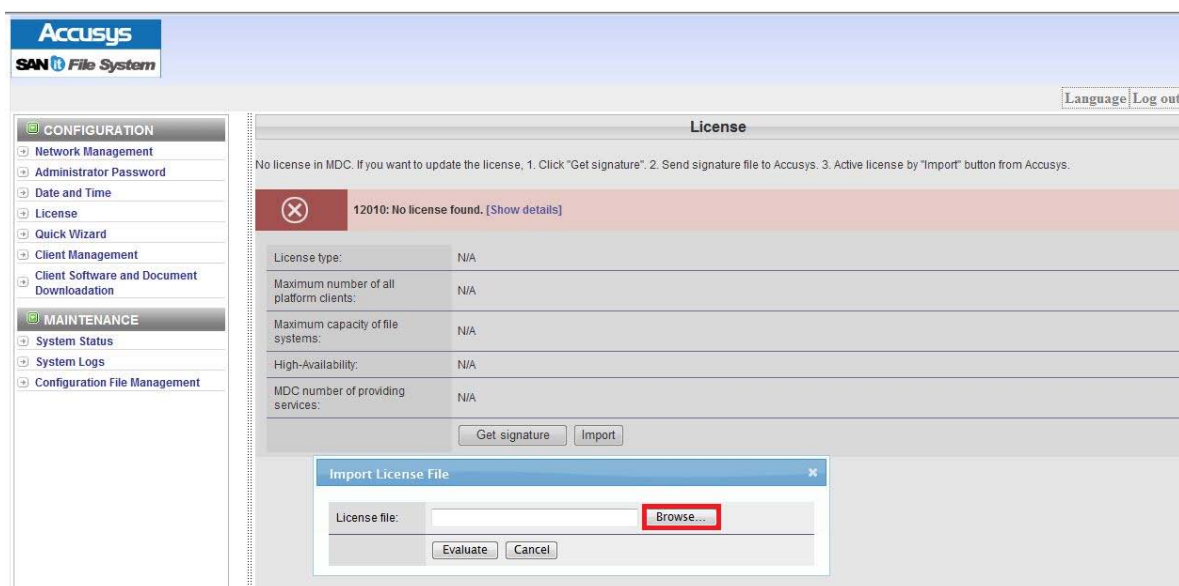
Step 3: Send the Signature file to your SANit provider/retailer to obtain the official license.



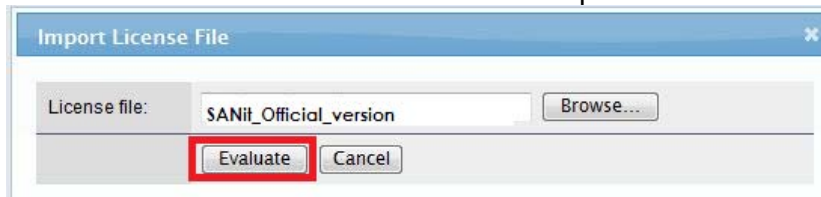
Step 4: After you obtain the official license, please unzip the zip file and then save the license file on your desktop.

Step 5: Open the web browser, such as Firefox, to enter the “**License**” of the configuration menu. Click “Import.”

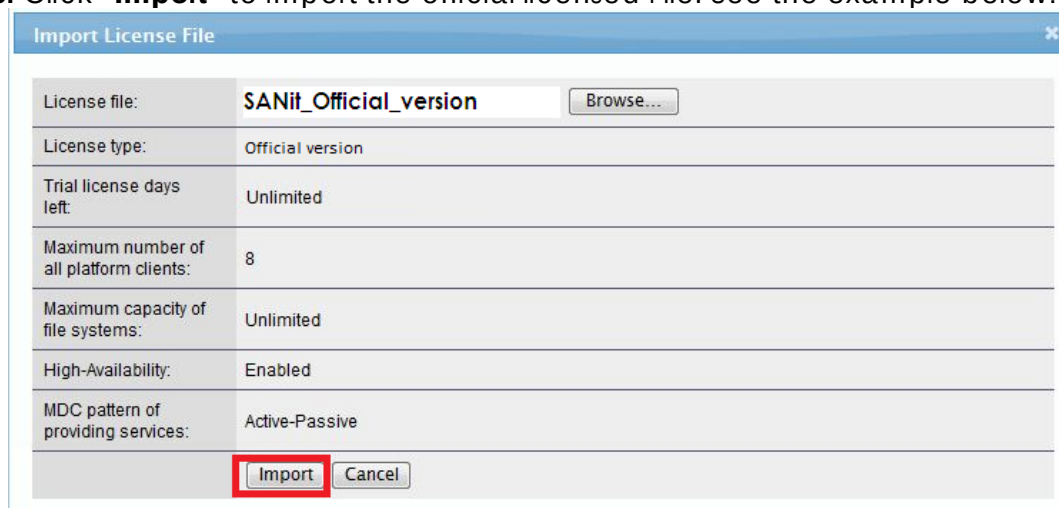
Step 6: Click” **Browse**” to find the license on your desktop.



Step 7: See License File and click "**Evaluate.**" See example below:



Step 8: Click "**Import**" to import the official licensed File. See the example below:



4.6.2 SAN Volume Creation (Quick Wizard)

Select Quick Wizard from the menu. Select Metadata and Data volume devices using the boxes (☐) as shown below. Enter Yes in the configure box below and click **“Configure.”**

Step 1: Give the file system name you require. (example ExaSAN)

Step 2: Select metadata volume (InnerRAID slim SA).

Step 3: Select the data volume (A12S2-PS).

Step 4: Enter “Yes” then press **configure**.

Accusys SAN File System

Language Log out

CONFIGURATION

- Network Management
- Administrator Password
- Date and Time
- License
- Quick Wizard**
- Client Management
- Client Software and Document Downloadation

MAINTENANCE

- System Status
- System Logs
- Configuration File Management

Quick Wizard

File system name: ExaSAN

Metadata volume(Choose one device):

	Device name	Device size	Company
☐	N/A	3.625GB	N/A
☐	A12S2-PS	21422.000GB	ACCUSYS
☒	InnerRAID Slim SA	7.208GB	ATA

Data volume(Choose one or more devices):

	Device name	Device size	Company
☐	N/A	3.625GB	N/A
☒	A12S2-PS	21422.000GB	ACCUSYS
☐	InnerRAID Slim SA	7.208GB	ATA

Enter "yes" to confirm that you wish to config the file system, then click **Configure**.

4.6.3 Delete SAN Volume (Quick Wizard)

Step 1: Click “Yes” and click “Force Delete.” See below:

Accusys
SAN File System

Language Log out

CONFIGURATION

- Network Management
- Administrator Password
- Date and Time
- License
- Quick Wizard
- Client Management
- Client Software and Document Downloadation

MAINTENANCE

- System Status
- System Logs
- Configuration File Management

File system name: ExaSAN

Metadata volume(Choose one device):

	Device name	Device size	Company
☐	N/A	3.594GB	N/A
☐	A12S2-PS	4657.000GB	ACCUSYS
☐	A12S2-PS	4657.000GB	ACCUSYS
☒	InneRAID Slim SA	7.208GB	ACCUSYS

Data volume(Choose one or more devices):

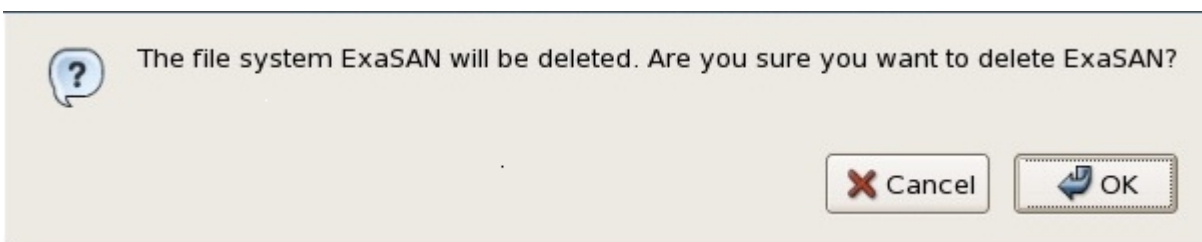
	Device name	Device size	Company
☐	N/A	3.594GB	N/A
☒	A12S2-PS	4657.000GB	ACCUSYS
☒	A12S2-PS	4657.000GB	ACCUSYS
☐	InneRAID Slim SA	7.208GB	ACCUSYS

Enter "yes" to confirm that you wish to config the file system, then click Configure **Yes** **Force Delete** Rescan Device

Step 2: Click "OK" to delete SAN volume including both data and metadata.

Warning:

Some data maybe lost.



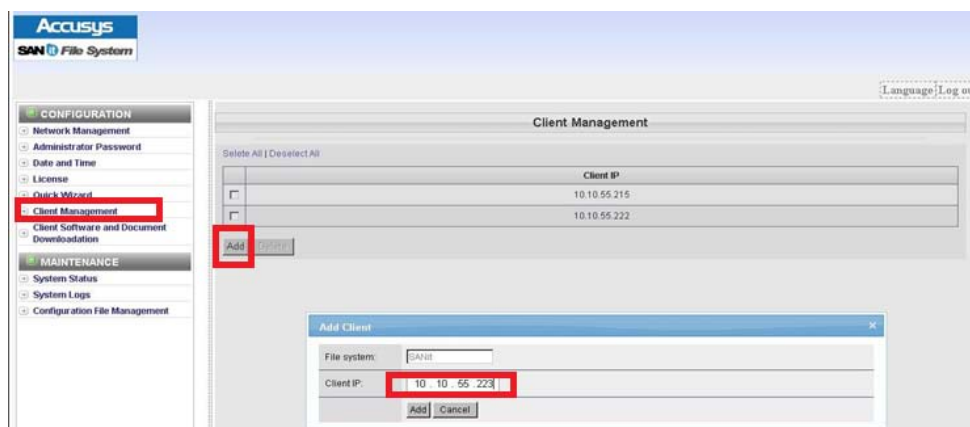
4.6.4 Add SAN Client IP on SANit (SW16 Side)

Add each client IP to join a SAN group. Before you add a client IP, ensure that your IP can “Ping” to MDC IP. See the steps below:

Step 1: Click “Client Management” and then click “Add.”

Step 2: Enter your computer’s IP address in the Client IP box.

Step 3: See Client Management screen below. (For checking the status of the added clients)

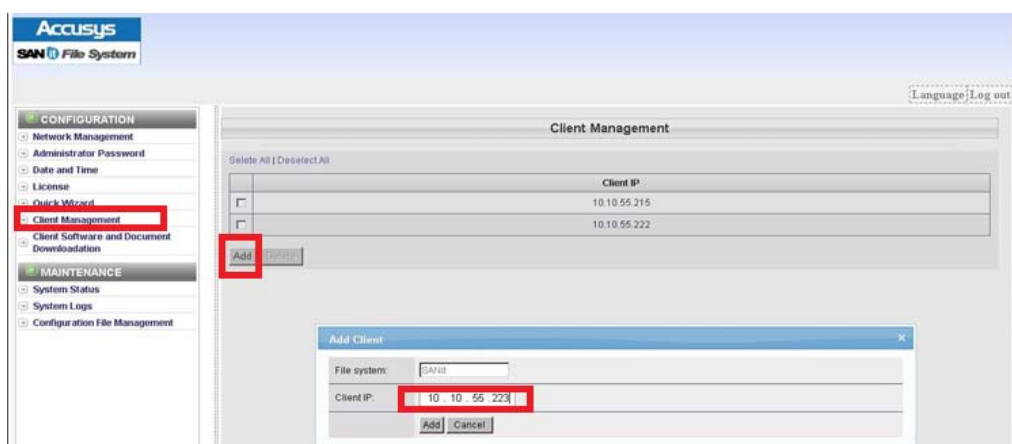


Important: Ensure that you have seen the RAID Volume then you can do the installation. Besides, **DO NOT** change the client’s IP address after you add the client’s IP in the “Client IP” list. If you still need to change the IP of the client, please add the new IP address of the client into the “client IP” list as a new one and then you can erase the old IP of the client from the list.

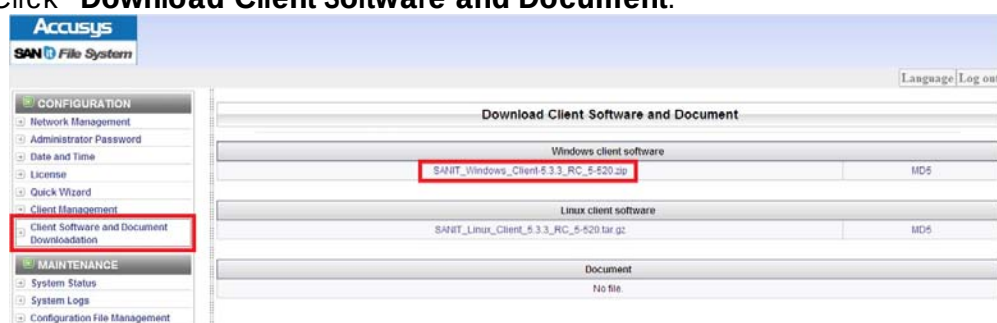
4.6.5 Add Clients (Client Side)

You can easily add clients by following the client side installation and set up procedures. See the steps below:

Step 1: After adding the client IP(example: 10.10.55.223), you can go to this page to download client software.



Step 2: Click “Download Client Software and Document.”



Step 3: Select the client software that you require for installation.

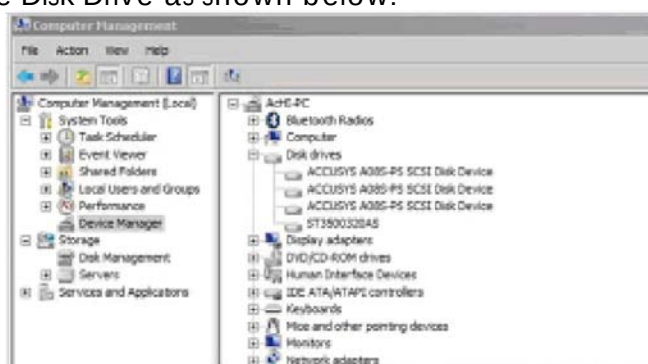
4.6.5.1 Supported Operating Systems and Platforms in Client

Supported Operating Systems and Platforms in Client			
O.S. type	Operating System	Kernel or Release	Platform
Windows	Windows 2003 Server	SP2	x86 32-bit
			x86 64-bit
	Windows 2008 Server	SP1	x86 32-bit
			x86 64-bit
	Windows XP	SP2, SP3	x86 32-bit
			x86 64-bit
	Windows Vista	SP1	x86 32-bit
			x86 64-bit
	Windows 7	---	x86 32-bit
			x86 64-bit
Linux	Red Hat Enterprise Linux 4	Update1~7	x86 32-bit
			x86 64-bit
	Red Hat Enterprise Linux 5	Update1~3	x86 32-bit
			x86 64-bit
	CentOS 4	Update1~7	x86 64-bit
	CentOS 5	Update1~3	x86 64-bit
	SUSE Linux Enterprise Server 10	2.6.16-46-0.12 (SP1)	x86 32-bit
			x86 64-bit
		2.6.16-60-0.27 (SP2)	x86 32-bit
			x86 64-bit
MAC	MAC OX 10	10.5	workstation
		10.6	workstation
		10.7	workstation

4.6.5.2 Windows Clients

4.6.5.2.1 Install SANit Client on Windows Platform

Step 1: Select the “**Computer Management**” file in your computer. Select “**Device Management**” and then select: Disk drives.” Confirm that the device, with installed driver, appears in the Disk Drive as shown below:



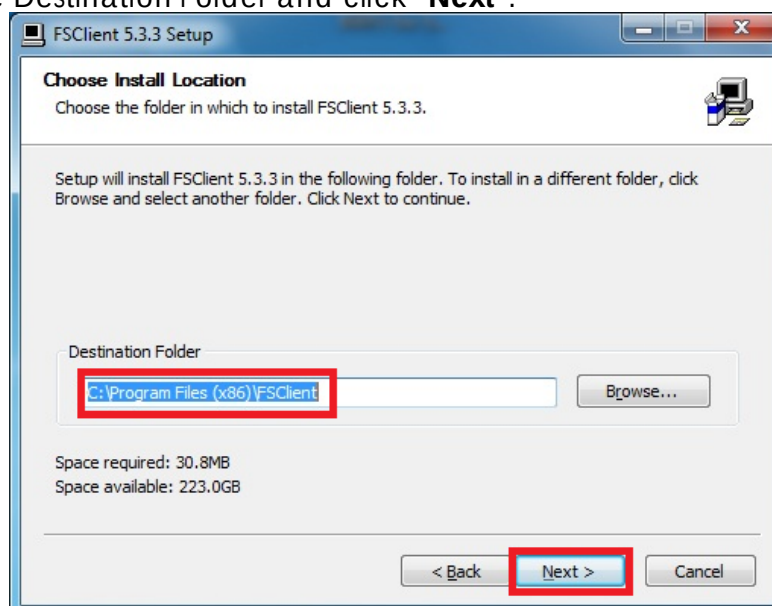
Note

If you cannot see the storages you created in Disk drivers list, it means you don't install the SANit client software properly.

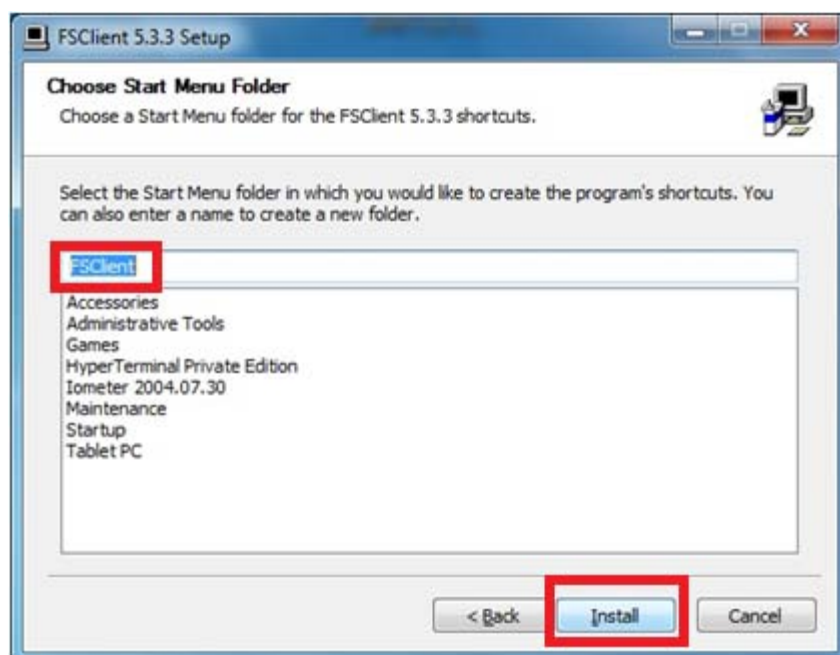
Step 2: Choose a language, and then follow the steps in the installation procedures as shown. Continue installation using the FS Client 5.3.3 Setup Wizard by clicking “**Next.**”



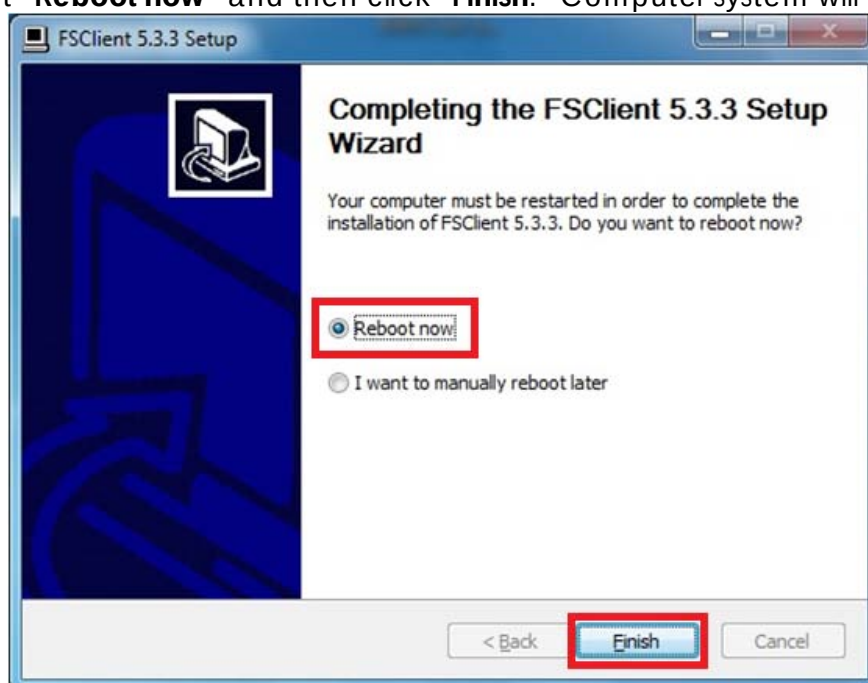
Step 3: Enter the Destination Folder and click “Next”.



Step 4: Enter the folder name (“FS Client” is the default name or you may choose) and then click “Install.”



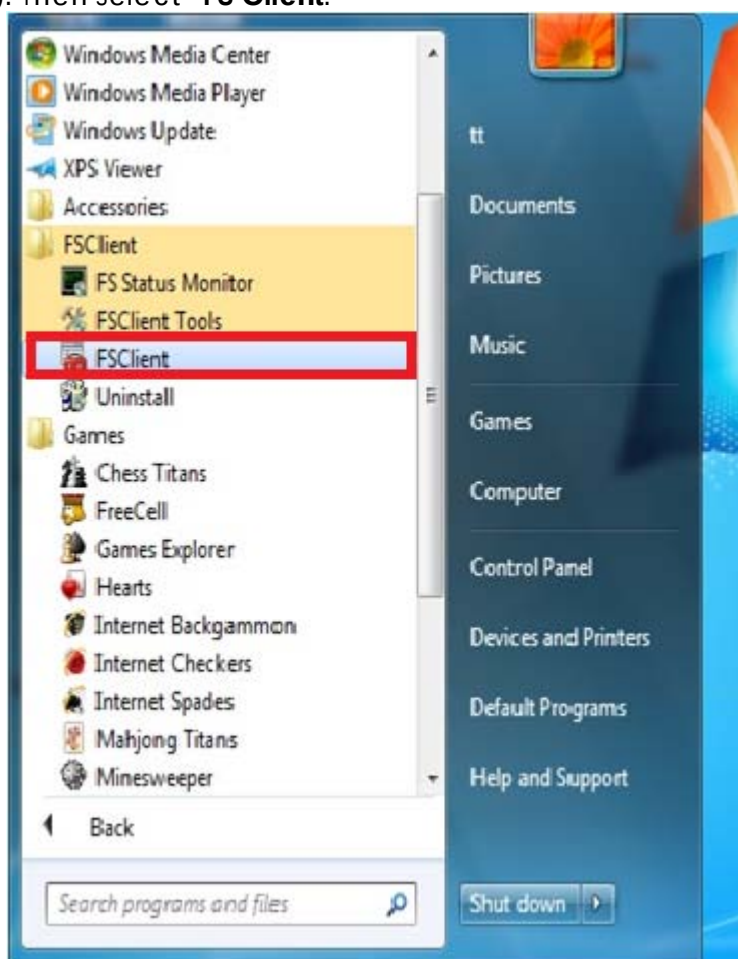
Step 5: Select “**Reboot now**” and then click “**Finish**.” Computer system will then reboot.



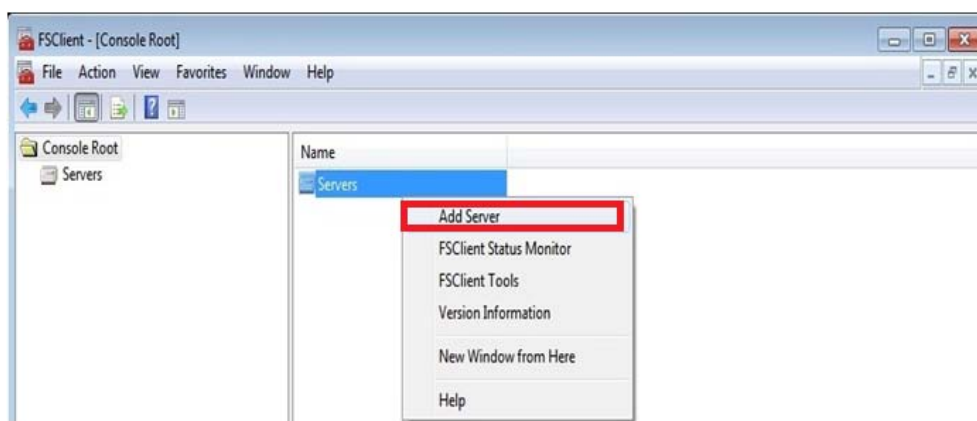
4.6.5.2.2 Configure SANit Client on Windows Platform

The steps below will help you configure SANit clients on the Windows platform:

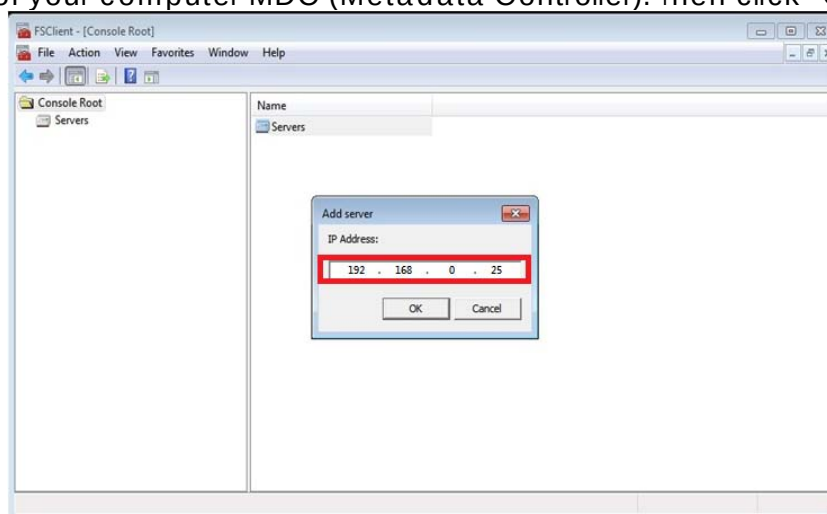
Step 1: Select the Start menu in the lower left side of your computer screen and select “**All Programs.**” Select the FS Client (or other folder name, see “Enter the folder name and click Install.”). Then select “**FS Client.**”



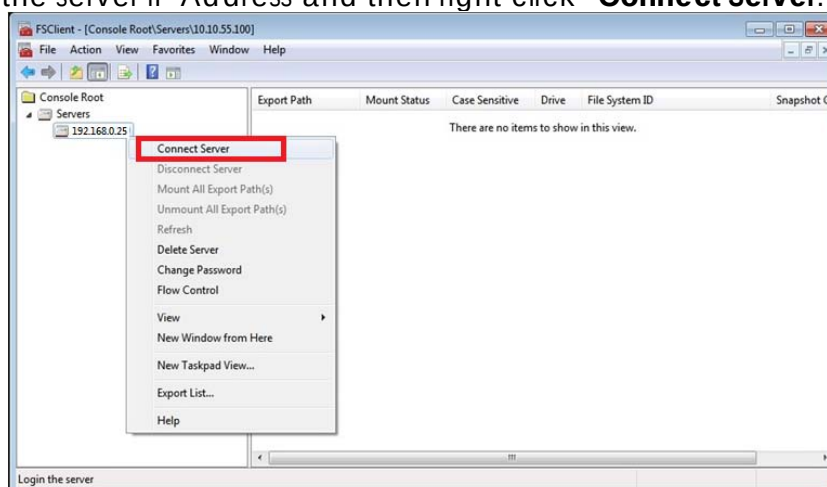
Step 2: See the screen below. Click “**Servers**” and then right click “**Add Server.**”



Step 3: Enter your computer's SW16 IP Address. Use the same IP address (example: 192.168.0.25) of your computer MDC (Metadata Controller). Then click "OK."

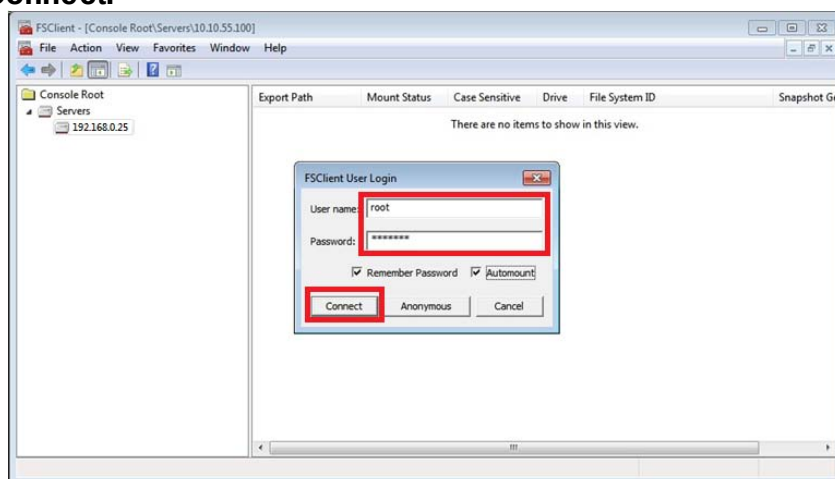


Step 4: Select the server IP Address and then right click "Connect Server."

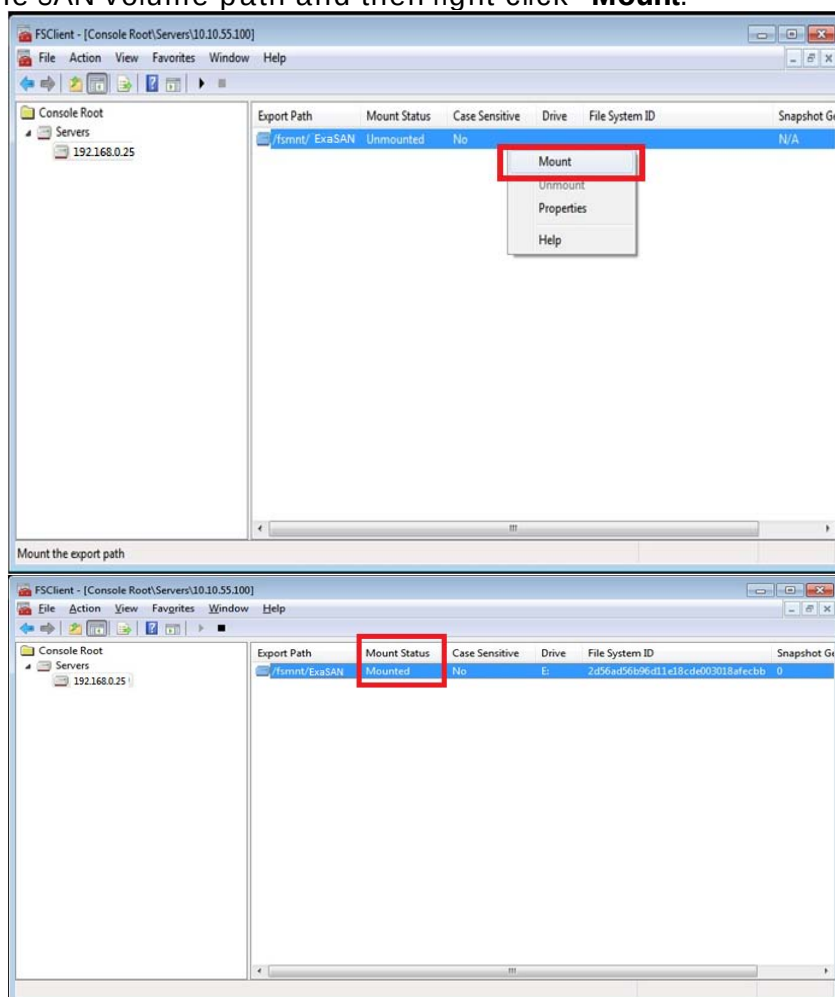


Step 5: Log into the SANit web GUI of SW16
 a. Type the user name (admin) and password (00000000) of SANit FS.

- b. Check **“Remember Password”**
- c. Check **“Automount”**
- d. Click **“Connect.”**

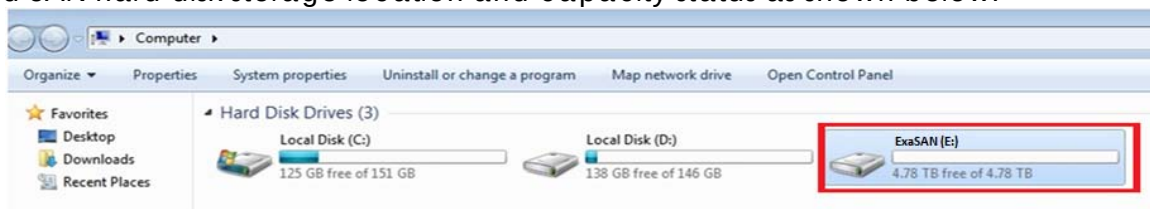


Step 6: Click the SAN volume path and then right click **“Mount.”**



When you see “Mount Status” is “Mounted”, it means the client has mounted to the SW16 successfully.

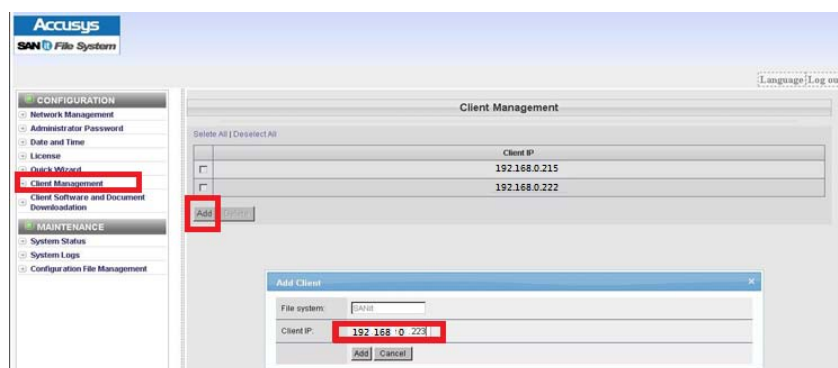
Step 7: Finally, click the “**Computer**” icon on your desk top. See client local hard disks and SAN hard disk storage location and capacity status as shown below:



4.6.5.3 MAC Client

4.6.5.3.1 Install SANit Client on Mac Platform

Add each client IP to join the SAN group. Before you add a client IP, ensure that your IP (example: 192.168.0.233) can “**Ping**” to the SW16 IP(example: 192.168.0.25). See the steps below:

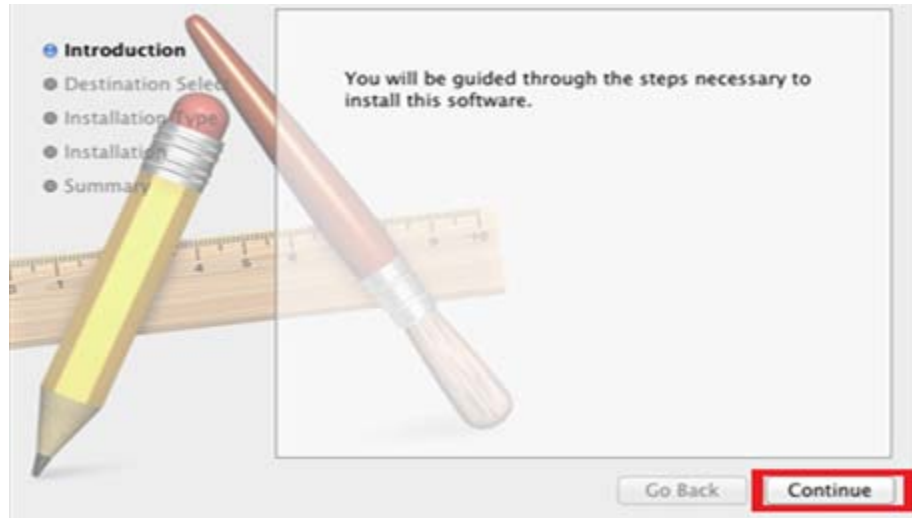


Step 1: After you download the SANit Mac client software, please follow the installation procedures as follows:

Note:

In SANit version 5.3.3, you may not find the MAC client software in the “Download Client Software and Document.” Future version may support Mac client software. Please contact your SANit supplier or visit the Accusys web site <http://www.accusys.com.tw> to learn more.

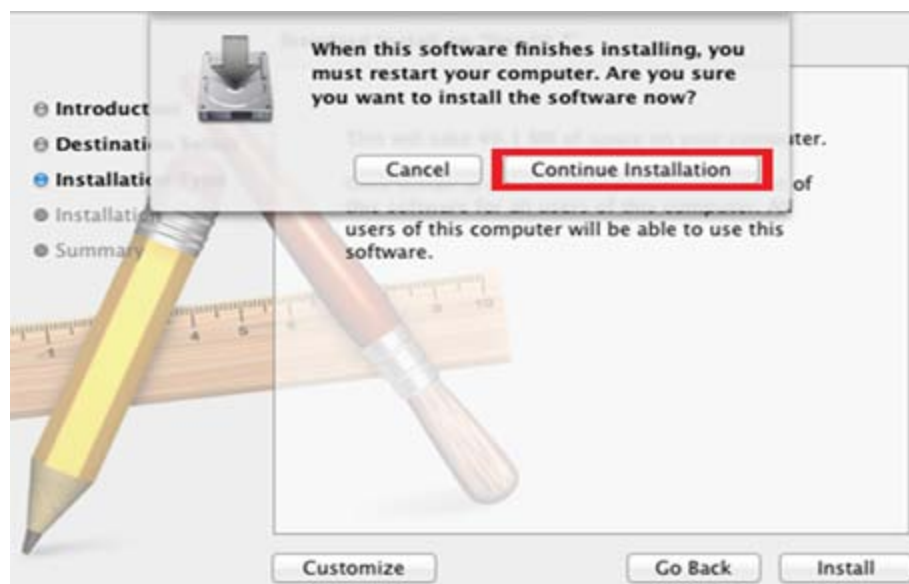
Step 2: Double click “**SANit Mac client software**” to install it and then click “**Continue**.”



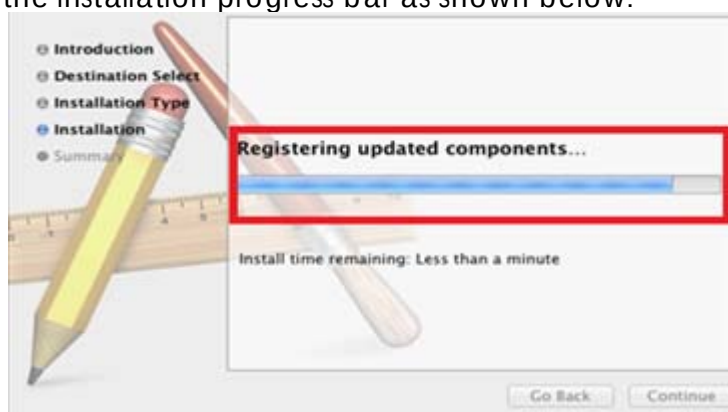
Step 3: Click “Install.”



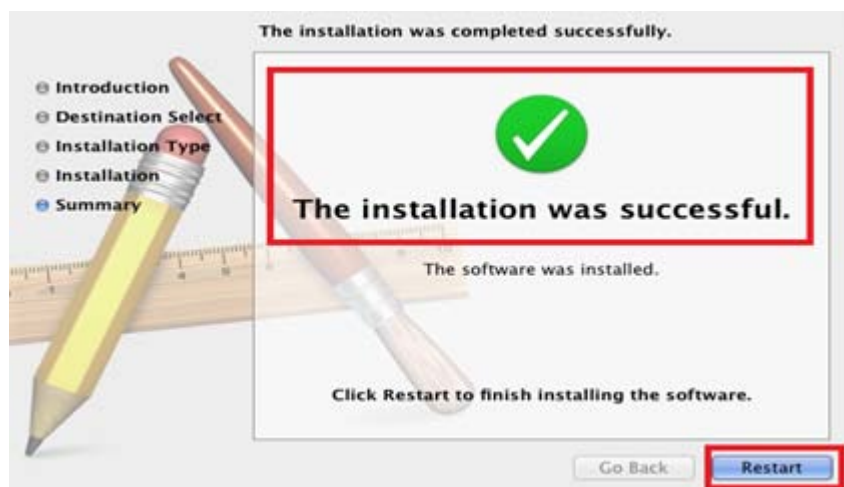
Step 4: Click “Continue Install.”



Step 5: You will see the installation progress bar as shown below:



Step 6: After the installation is completed, please click “**Restart**” to restart (Reboot) your MAC system.



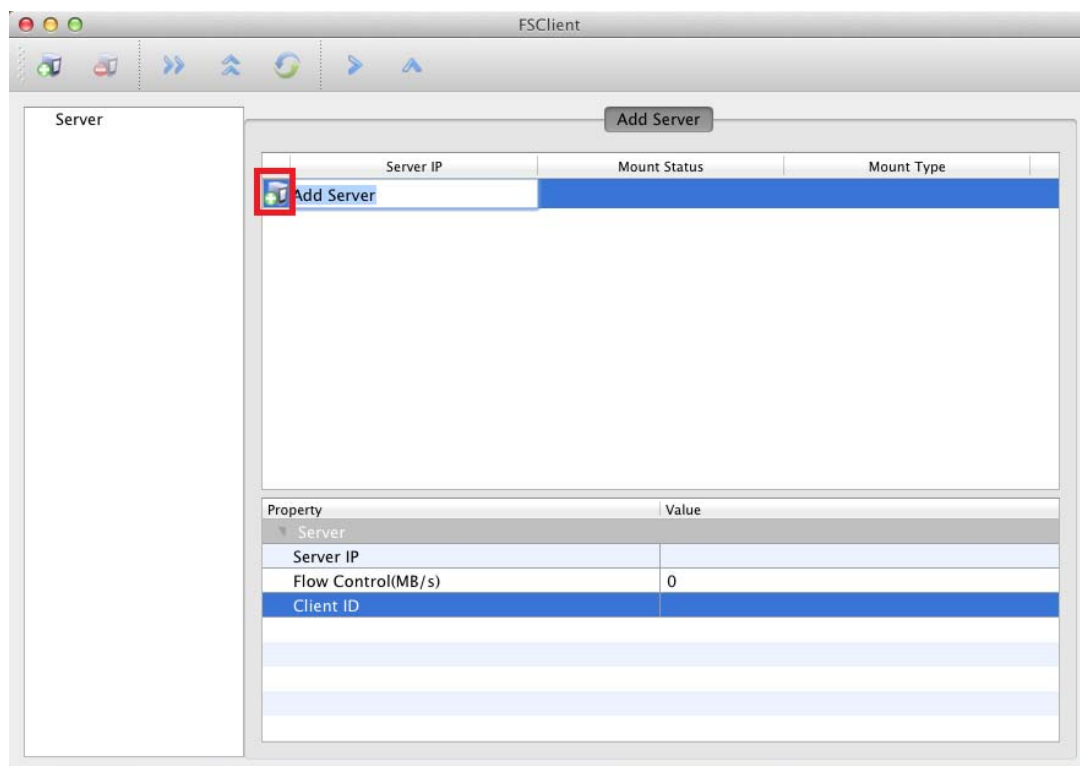
4.6.5.3.2 Configure SANit Client on a MAC Platform

The following will show you how to configure SANit clients on a MAC platform. See below:

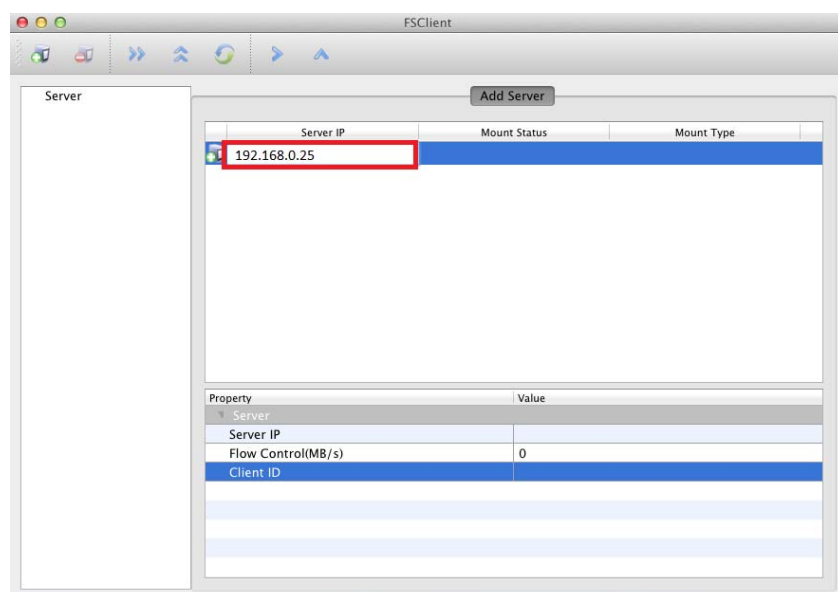
Step 1: Click “Go” and then click “Utilities”

Step 2: Click “SANit.app” icon .

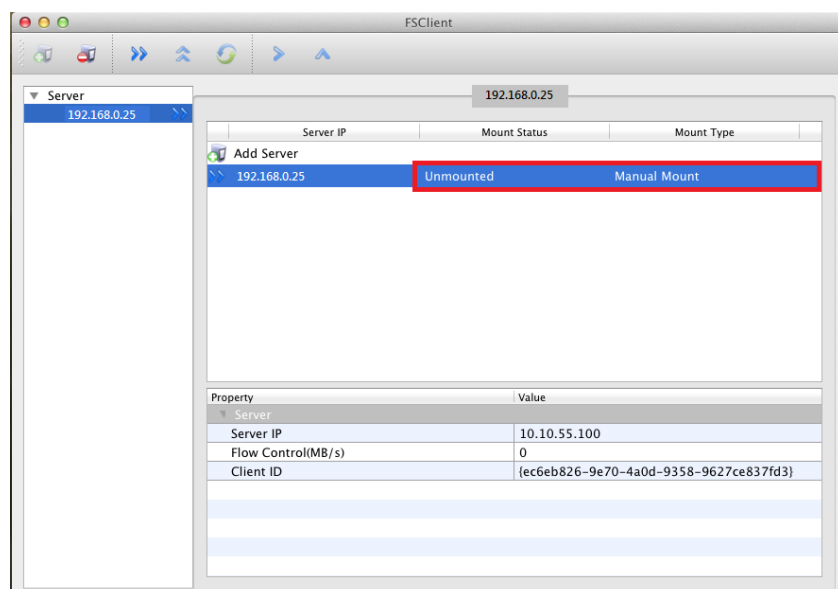
Step 3: Then click “Add Server.”



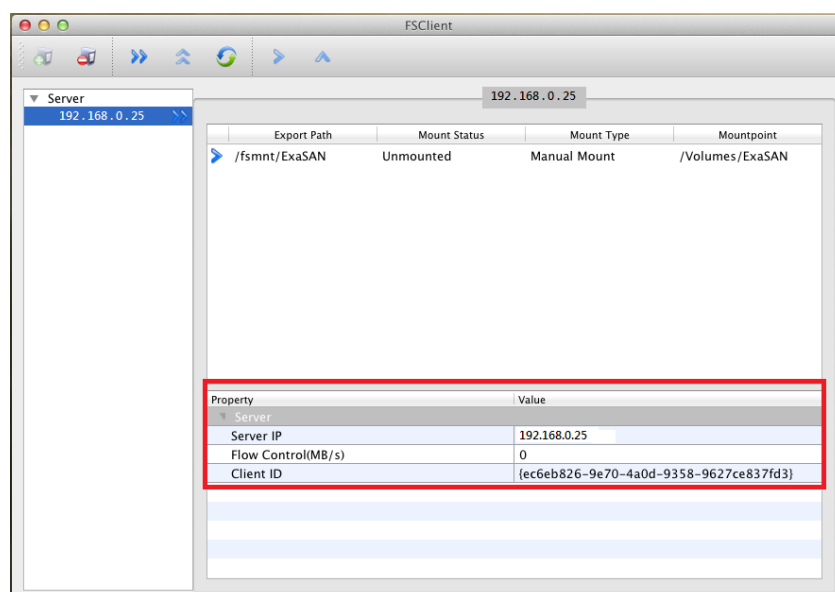
Step 4: Add the SW16 IP address (example: 192.168.0.25).



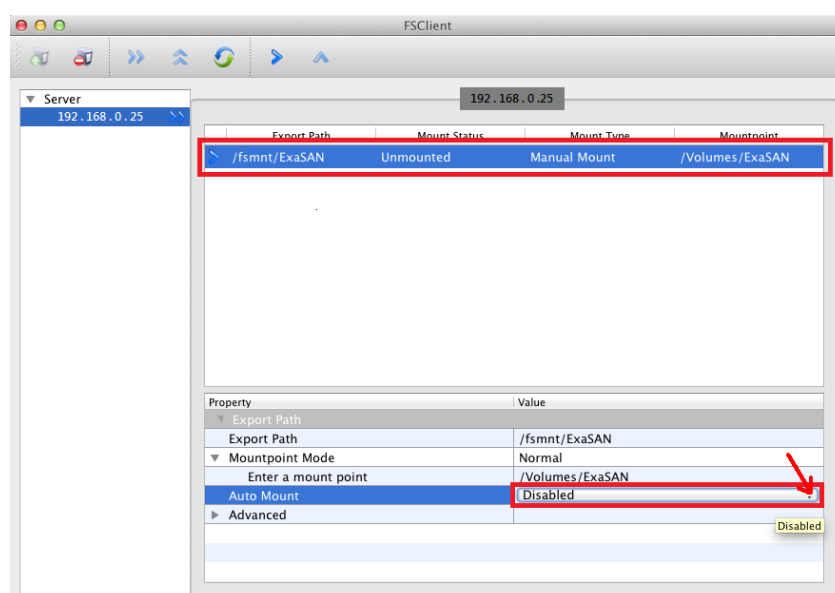
Step 5: See blue status bar with “Unmounted” and “Manual Mount” as shown below:



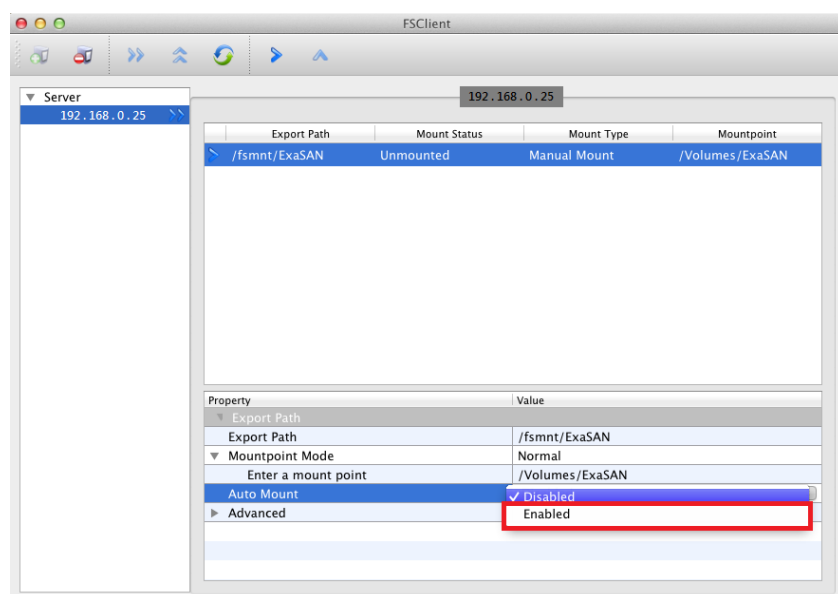
Step 6: See status information as shown below:.



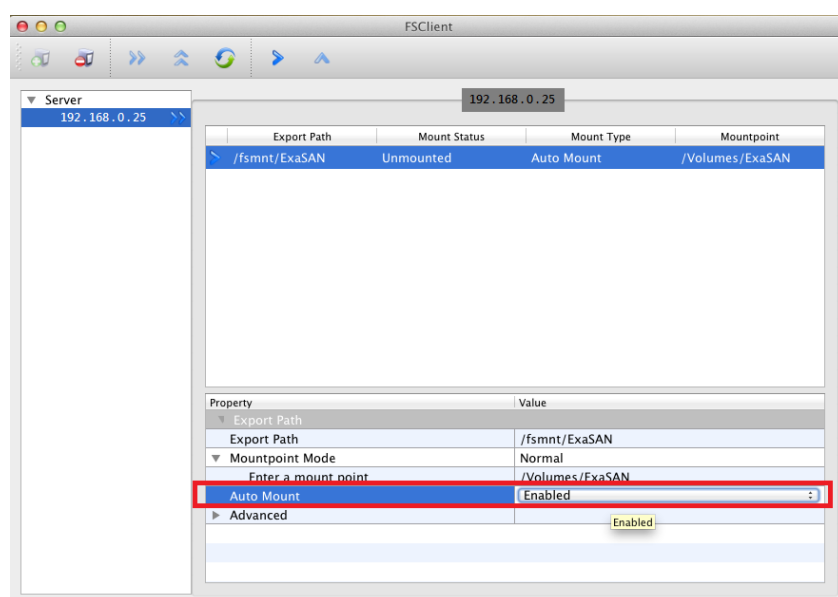
Step 7: In the “Value” column, click the arrows in the “Disabled” row. See below:



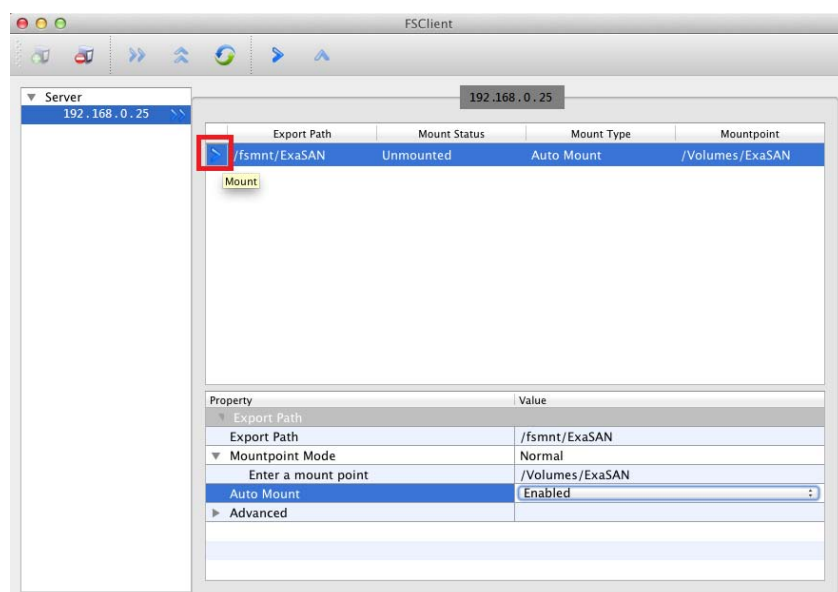
Step 8: See the below options. Click “Enabled.”:



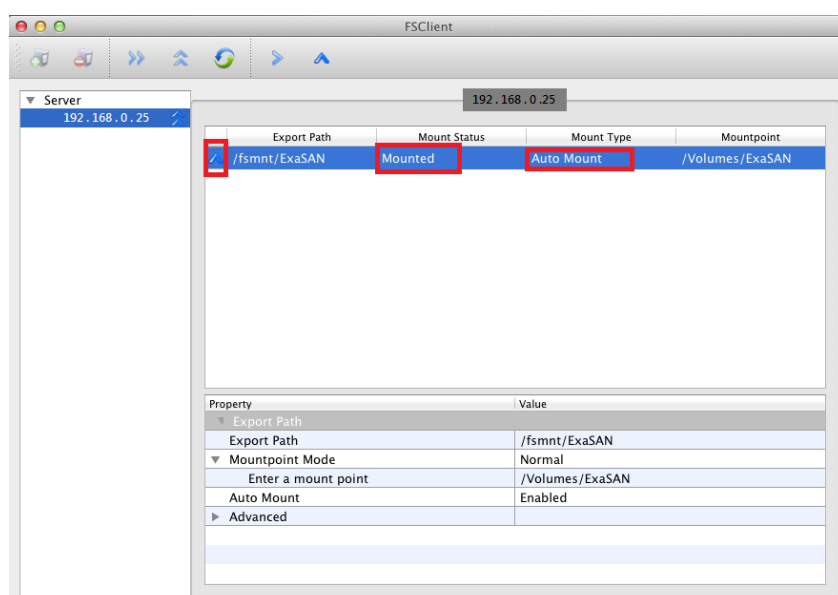
Step 9: See the below information:



Step 10: Select “Mount” by clicking the arrow to the vertical position as shown below:

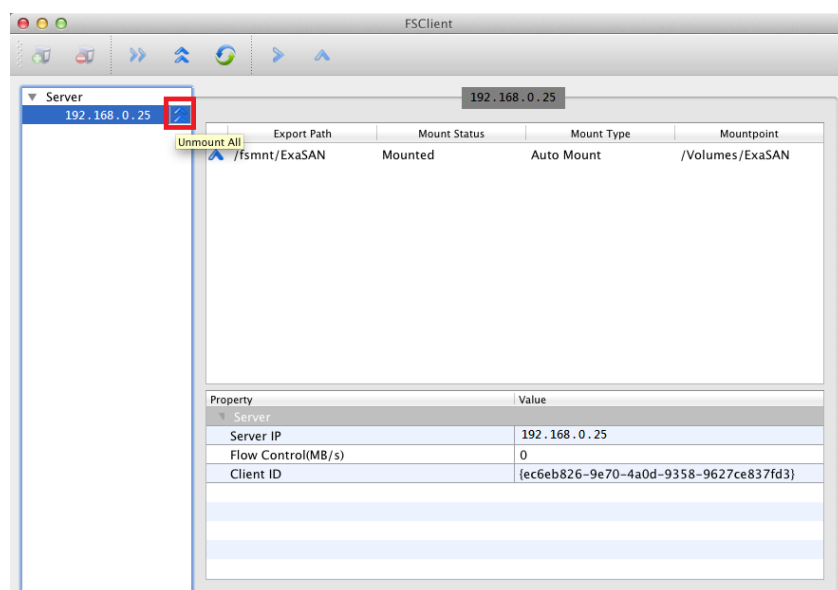


Step 11: See the below information:

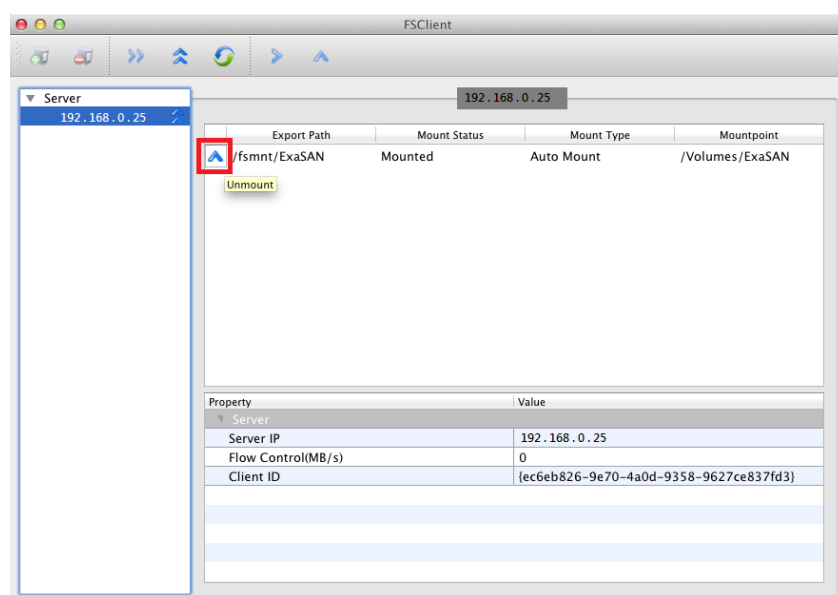


Step 12: You will see the ExaSAN Hard Drive icon on your desk top computer to confirm that you have full read/write and auto volume mounting to fully utilize your San system for Mac clients in normal operations.

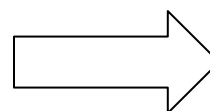
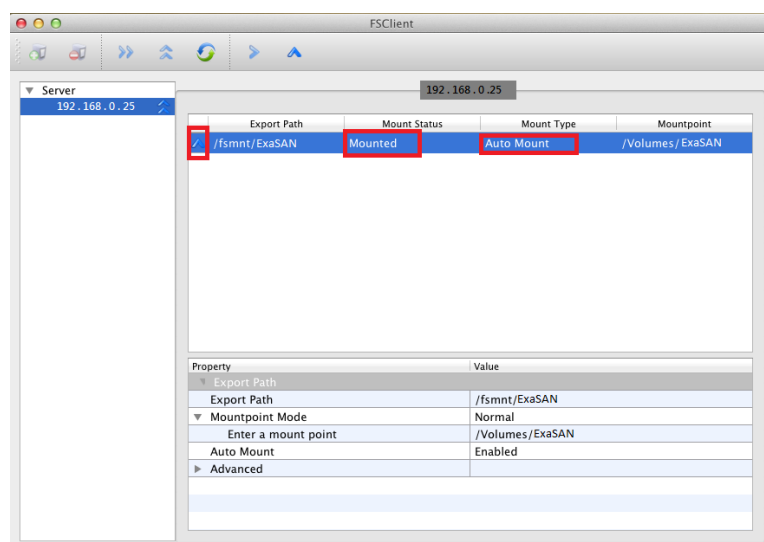
Step 13: If you decide to unmount (end normal read/write and auto mount operations), then click the arrows in the server column as shown below:



Step 14: Click the arrow as shown below:



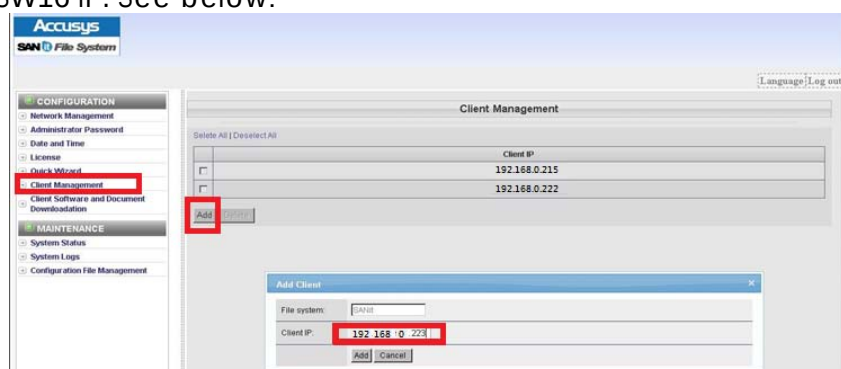
Step 15: When the mounting is finished, you will see the “Volume” icon (ExaSAN hard drive icon) on your Desktop.



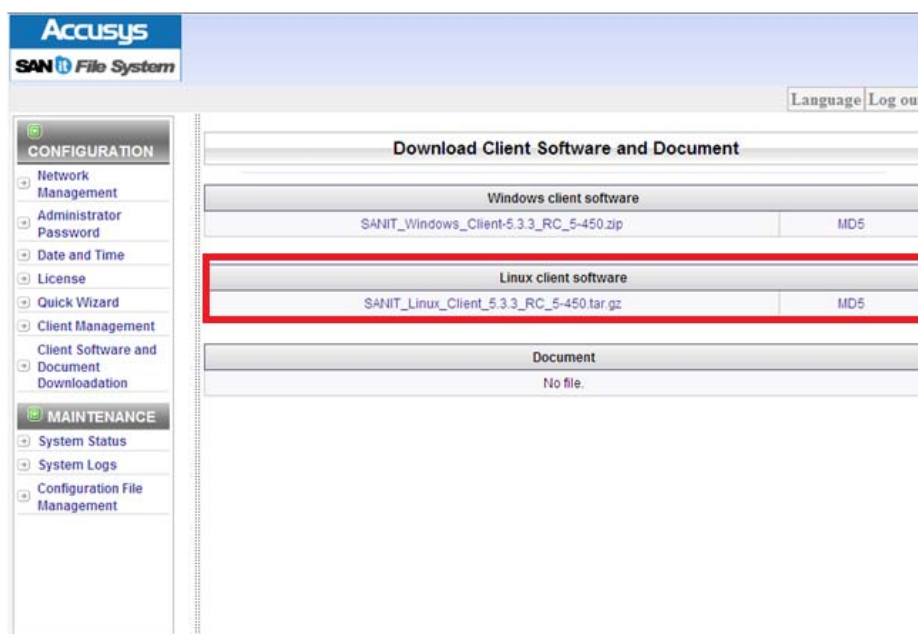
SANit

4.6.5.4 Linux Clients

Add clients IP to join the SAN group. Before you add a client IP, ensure that your IP can “Ping” to the SW16 IP. See below:



Step 1: Click “Download Client Software and Document.”



4.6.5.4.1 Install and Configure SANit Linux Client Software

Step 1: Install the SANit Linux client. Type “`./client_installer.sh install`” on command.

Step 2: Mount the SANit volume, type “`mount -t enfs -o _netdev <MDC_IP_ADDRESS>:/fsmnt/<SANit file system name> /mnt/`”

```

root@localhost:~/Desktop/SANIT_Linux_Client
File Edit View Terminal Tabs Help
[root@localhost ~]# cd '/root/Desktop/SANIT_Linux_Client'
[root@localhost SANIT_Linux_Client]#
[root@localhost SANIT_Linux_Client]# ./client_installer.sh install
Checking kernel Version... [ OK ](2.6.18-128.el5 x
86_64)
Checking enfs-kmod Version... [ INSTALL ](Installing AS-Li
nux-2.6.18-128.el5-x86_64/enfs-kmod-2.6.18-128.el5-5.3.3-11753.x86_64.rpm)
Checking utils Version... [ INSTALL ](Installing linux_as_
tools-5.3.3-11660.rhel5.x86_64.rpm)
Client is installed successfully.
[root@localhost SANIT_Linux_Client]#
[root@localhost SANIT_Linux_Client]#
[root@localhost SANIT_Linux_Client]# mount -t enfs -o _netdev 192.168.0.25 /fsmnt/ExaSAN /mnt/
[root@localhost SANIT_Linux_Client]# df
Filesystem            1K-blocks      Used Available Use% Mounted on
/dev/sda1             385745432    3873220  361961256    2% /
tmpfs                  3054240         0    3054240     0% /dev/shm
10.10.55.100:/fsmnt/ExaSAN
3647934464         0 3647934464     0% /mnt
[root@localhost SANIT_Linux_Client]#

```

Note:

Please enter the SANit configuration menu and go to “**System Status**”. You can find “**Mount point**” (See below). For example, if you find the mount point is /fsmnt/SANit, you can type the following command:

`mount -t enfs -o _netdev 192.168.0.25:/fsmnt/ExaSAN /mnt`

The screenshot shows the Accusys SAN File System web interface. On the left is a navigation menu with 'CONFIGURATION' and 'MAINTENANCE' sections. The 'System Status' page is displayed, featuring a table with columns: Status, File system name, Mount point, and Capacity. The 'Mount point' column is highlighted with a red box. A white arrow points from this box to a larger red-bordered box below, which contains the text 'Mount point' and '/fsmnt/ExaSAN'.

Status	File system name	Mount point	Capacity
Running	ExaSAN	/fsmnt/ExaSAN	Total: 9313.961GB Free: 9313.961GB 0.00%

Mount point
/fsmnt/ExaSAN

5. RAID Overview

5. RAID Overview

This chapter gives an overview of RAID storage system within the context of recommended setting of ExaSAN based SAN environment to provide fast, shared storage to client computers.

5.1 How RAID Works

RAID, or Redundant Array of Independent Disks, is a data-storage technology that spreads data across multiple drives. This technology provides several benefits over a single large hard disk, including:

- Data redundancy for protection and availability
- Higher performance as a result of reading or writing on several drives simultaneously
- Scalability for expansion of storage

The ExaSAN-family RAID systems use a hardware controller, which manages up to 48 HDDs. By segmenting and writing or reading data on multiple drives simultaneously, the RAID controller achieves fast and highly efficient storage and access.

The way the controller stores and retrieves data on the RAID system is determined by the RAID level and storage method you choose. For ExaSAN applications, the recommended setting is mainly RAID 1 and RAID 5, which will be discussed in details later in this chapter.

Once you have defined a group of drive modules as a RAID set, the controller groups those drives into “logical disks.” On the ExaSAN RAID system, each logical disk appears to the client system as one Logical Unit (LUN), regardless of the number of actual drives in that logical unit.

5.2 Data Storage Methods

The controller stores and retrieves data on a RAID system using techniques such as “data striping”, “data mirroring”, and “data parity”.

5.2.1 Data Striping

Multiple hard disk drives in a RAID group, referred to as a “set” or “array,” are divided (partitioned) into stripes. The controller spreads stripes across the disks in alternating sections on each drive.

In data-intensive environments such as digital video editing, performance is optimized by writing data across small stripes, so that each record spans all drives. This method ensures that access to large records is very fast because data is transferred in parallel across multiple drives.

5.2.2 Data Mirroring

To mirror data, the RAID controller duplicates all data on two different disks. One disk is the primary; the other is the mirrored disk. The primary and mirrored disks are

synchronized; that is, anything written to one disk is also written to the other. Mirrored data is very secure because if one disk fails, the data is available from the other disk.

5.2.3 Data Parity

The controller can generate “parity” for the ability to protect and rebuild data. Parity protects stored information without requiring data mirroring. When data is protected by parity, it is still available if a drive fails. Parity-protected data is reconstructed using the parity formula. You can remove and replace a failed disk (known as “hot swapping”), and the controller then rebuilds the data using the information on the remaining drives.

5.3 RAID Levels

The ExaSAN RAID system supports several RAID levels and configurations. Each level has a different architecture and provides varying degrees of performance and fault tolerance. Each level has characteristics to achieve maximum performance or redundancy depending on the data environment.

5.3.1 RAID 0: Striping

RAID level 0, striping only, is the fastest and most efficient array type, but offer no fault-tolerance. Any drive failure destroys the data in the array.

5.3.2 RAID 1: Mirroring

RAID level 1, mirroring, has been used for Metadata LUN because of its simplicity and high levels of reliability and availability. Mirroring uses two drives, each drive stores identical data. RAID 1 provides very high data reliability and improved performance for read-intensive applications, but this level has a high capacity cost because it retains a full copy of your data on each drive in mirror set.

In a RAID 1 configuration, the capacity of the smallest drive is the maximum storage area.

5.3.3 RAID 5: Independent data disks with distributed parity

By distributing the parity information across all drives in a set, RAID level 5 achieves high reliability and data availability. It also offers the highest read data transaction rate of all levels along with a medium write rate. The low ratio of ECC (Error Correction Code) parity disks to data disks offers hardware efficiency. Disk failure has a moderate impact on the total transfer rate.

5.3.4 RAID 6: Independent data disks with two Independent parity schemes

RAID level 6 extends RAID level 5 by adding an additional parity block; thus it uses block-level striping with two parity blocks distributed across all member disks. RAID 6 does not have a performance penalty for read operations, but it does have a performance penalty on write operations because of the overhead associated with parity calculations.

RAID 6 is no more space inefficient than RAID 5 with a hot spare drive when used with a small number of drives, but as arrays become bigger and have more drives the loss in storage capacity becomes less important and the probability of data loss is greater. RAID 6 provides protection against data loss during an array rebuild, when a second drive is lost, a bad block read is encountered, or when a human operator accidentally removes and replaces the wrong disk drive when attempting to replace a failed drive.

5.3.5 RAID 0+1: Striped set with Mirroring

RAID 0+1 combines the advantages of RAID 0 and RAID 1 with none of the disadvantages. RAID 0+1 creates a mirror of the primary striped set. RAID 0+1 provides optimal speed and reliability.

6. Appendices

Appendix A: FAQs

1. Q: What is the different of SW16 and SWF16?

A: SW16 is the pure PCIe 2.0 switch of ExaSAN switch series. SWF16 is a three-in-one PCIe 2.0 switch. It includes MDC, SANit (SAN management software) and PCIe 2.0 switch. SW16 provide more options for users to choose SAN management software but not SANit.

2. Q: Why is my disk LED status RED?

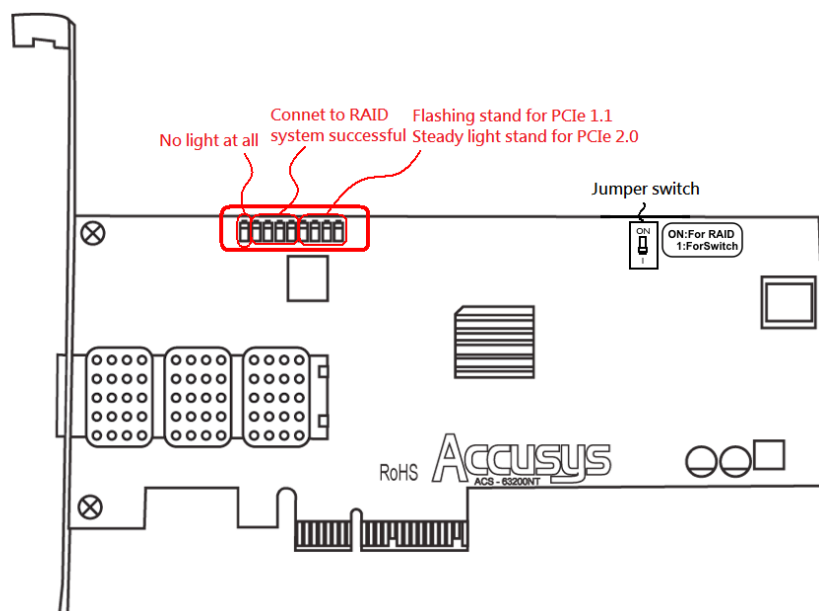
A: This is likely caused by a faulty hard drive. Replace the faulty drive as soon as possible to protect your data.

3. Q: After an array has been created in RAIDGuard X, but the host does not find the array volume.

A: Please check the LUN Mapping to ensure the array volume has been corrected mapped to a LUN. If this is not the case, try restarting the system and it will be automatically recognized. Once LUN is assigned, you can perform formatting and mounting.

4. Q: What does the eight LEDs on the Host Bus Adapter mean?

A: The eight LED indicate the connection status of the HBA (The LED closest to the bracket does not light up.) If you have properly connected the HBA to the B08S2-PS RAID controller, one set of 4 consecutive LEDs will be constantly lit. The second set of 4 consecutive LEDs indicates the type of PCIe connection - flashing LEDs indicate a PCIe Gen1 connection, while solid LEDs indicate a PCIe Gen2 connection.



5. Q: Why doesn't the performance reach the expected levels while testing the B08S2-PS? Why isn't the performance steady enough?

A: If the performance is unsteady or not achieving the expected level, in many cases, the HDD is the cause. Since the B08S2-PS is a highly efficient product, there is extreme demand placed on each HDD. As a result, it is strongly recommended to use the newest enterprise level HDD.

6. Q: Why is the B08S2-PS generating warning beeps?

A: Please check the LED indicators on the B08S2-PS front panel against the appropriate user documentation for your particular storage system. Follow the instructions to launch RAIDGuard X to obtain Event Log information for further analysis.

7. Q: If “Find no RAID card” appears in a Windows host server, how can this be resolved?

A: Please make sure the PCIe cable is properly connected to the back of the host server and the RAID system. Check the Device Manager in Windows to confirm that the correct driver has been installed for the HBA. If both conditions have been verified and the problem persists, please use the “Manually Add Controller” option.

8. Q: On a MAC host, after entering the GUI and adding a controller, there is no device listed. How can this be resolved?

A: Please first confirm whether the hardware environment of the RAID system is functional. Also, ensure that the system drivers have been correctly installed. Next, go to “**Utilities > System Information > Software > Extensions**” and check whether Accusys6xxxx is listed. In order to confirm whether GUI Server Service is running on the system, Go to “Utilities > Activity Monitor” and check whether the program name **DTRGuiSrv01** is under the program column. If the situation persists, please verify again that the hardware environment is not the source of the problem and reinstall using the MAC installer.

9. Q: My RAID system has an actual capacity of more than 2 TB, but in Windows XP and Windows 2000, it will only do a full format of less than 2 TB in capacity. How can this be resolved?

A: Since Windows XP 32 bit and Windows 2000 does not support GPT, both can only continue to use MBR (Master Boot Record), which only supports up to 2TB in one volume. To see more than 2TB in a single volume in Windows XP or 2000, go to RAIDGuard X, select “**Create Array**” and set the sector size to 4096 bytes. By doing this, Windows XP and 2000 will be able to format an MBR volume greater than 2TB. However, if the sector size is set to 4096 bytes, it can lower the performance of the RAID.

10. Q: In Windows Vista and Windows 7, after having confirmed that the files on the installation CD have been completely installed, why does it still show “Find no RAID card”?

A: Windows Vista and Windows 7 has a built-in ability to automatically reduce the potential of security breaches in the system. It does that by automatically enabling a feature called User Account Control (UAC). When UAC is enabled, the RAIDGuard

X server cannot detect the controller and thus displays the message "Find no RAID card." To resolve this, disable UAC and run RAIDGuard X server as "administrator".

Vista:

- a. Control Panel -> User accounts -> Change security settings -> Deselect "Use User Account Control (UAC) to help protect your computer."
- b. Restart the computer to turn off UAC.

Windows 7:

- a. Type "MsConfig" in Start Search to start System Configuration. Then go to Tools tab, select Change UAC settings, then click on Launch button.
- b. Slide the slider bar to the lowest value (towards Never Notify) with the description showing "Never notify me".
- c. Restart the computer to turn off UAC.

11. Q: When inserting the HDD into my B08S2-PS, why does RAIDGuard X show the HDD mode as Lock?

A: The lock indicates that the HDD has been previous used in Accusys products and that it contains a portion of a RAID data. If the data can be deleted, you can unlock the HDD.

12. Q: I have connected the cable to the Host server, but I can't see "new disk drive" on the host device management.

A: There are three possibilities:

- a. Please ensure the QSFP cable is connected securely. You should be able to hear a "click" sound when you connect the cable to the connector.
- b. Please check the jumper switch on the HBA. When the switch is in the "On" position, the HBA card is enabled for storage mode for the B08S2-PS. In the "1" position, the HBA is enabled for switch mode for the SW04/08.
- c. Please check if the installer and the driver have been installed correctly. If the installation has completed and the error still persists, it may be a compatibility issue. Send an email to support@accusys.com.tw and briefly describe the problem. Be sure to include the driver error code, the motherboard (or host) model name and the OS. We will contact you to assist you in resolving the issue.

Appendix C: Customer Service and Support

B.1 System Log

When you contact us for technical support, our support staff might ask for your system log file for troubleshooting purpose.

Go to the ExaSAN switch GUI, select the “Event Management” icon. Follow instructions there to download the log file.

B.2 Contact Us

For customer services and technical support, locate an Accusys office near you from the link below:

<http://www.accusys.com.tw/about/contact.htm>

Or, you may email us at support@accusys.com.tw

B.3 Our Website

Please visit our websites frequently for the most up-to-date product and support information.

All countries: www.accusys.com.tw

Korea: <http://accusys.co.kr>

